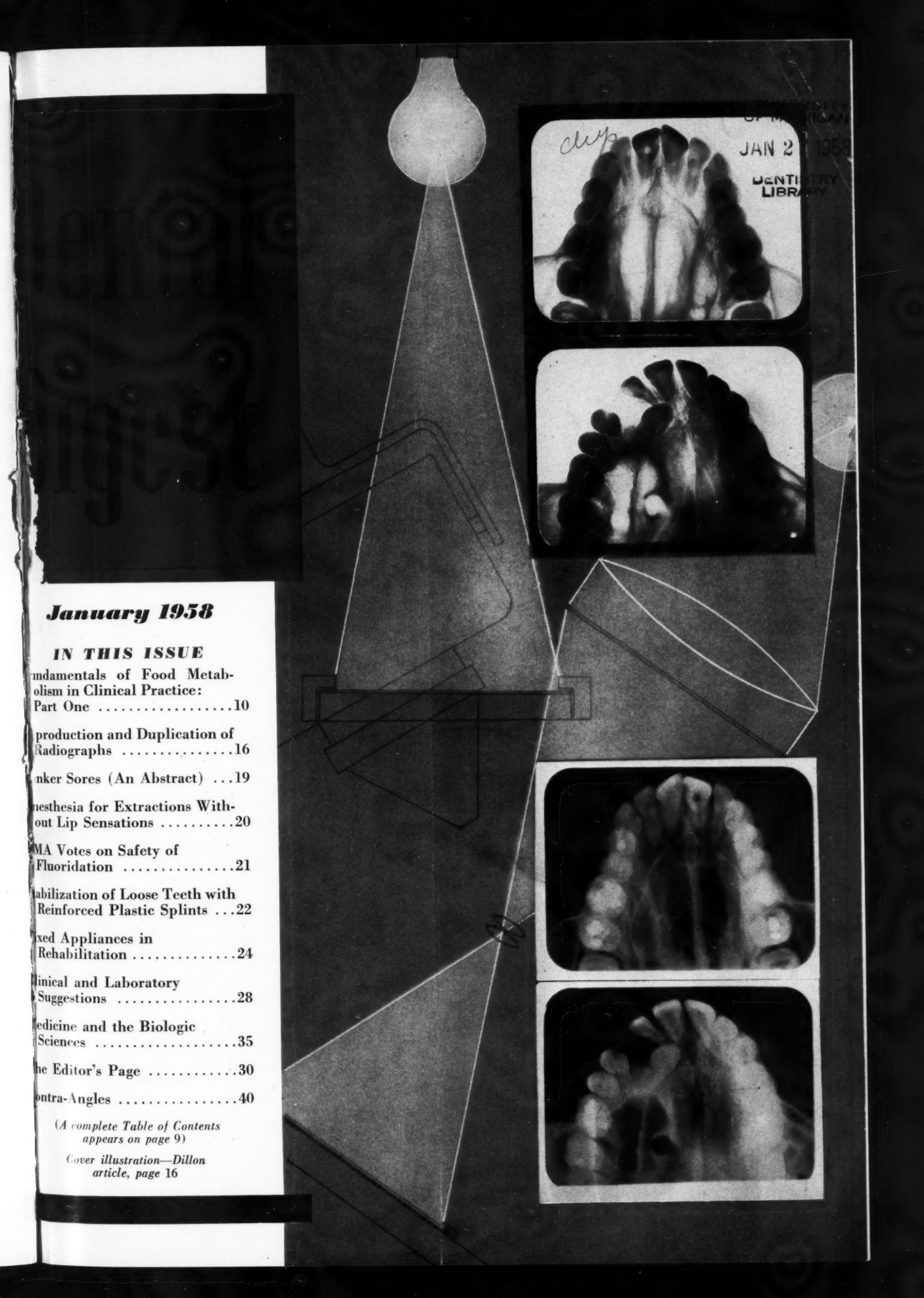

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EDWARD J. RYAN, B.S., D.D.S., Editor
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Fundamentals of FOOD METABOLISM *in Clinical Practice: Part One*

MICHAEL RABBEN, D.D.S., Phoenixville, Pennsylvania

DIGEST

Ignorance is frequently responsible for a lack of appreciation of the role of food metabolism as a factor in the maintenance or restoration of oral health as well as general health. The uninformed doctor often follows one of two paths, either of which is detrimental to the welfare of the patient: (1) he dismisses the subject as unimportant and without effect, or (2) he goes to the opposite extreme and adopts food fads or unscientific measures. This situation is aptly described:[1] "Unless the dentist keeps himself well informed on the latest aspects of nutrition, he would be wise to speak sparingly on the subject lest he unwittingly aline himself with that endless group who blithely continue to err in the interest of nutrition."

Food as a therapeutic agent, plays an important part in many disorders. Why, for example, has dietary control failed as a measure to prevent dental caries? Is dietary control ineffective in periodontal disease? Why has abstention from certain foods failed to solve the problem of allergy? Does dietetic therapy really fail in arthritis? Has the removal of cholesterol foods from the diet failed to stem the tide of cardiovascular disease? Why has food control been ineffective in diabetes, in nephritis, and ulcers? What is the reason for the failure of caloric restriction in controlling obesity? Does food play a part in mental disorders.[2,3,4] In cancer?

In the last ten years, it has been observed that after immigrants have been in this country for a year, or less, they develop caries, chronic gingivitis, periodontal disease, allergies, frequent colds, chronic fatigue and many other common American ills. The significant fact is that they never had these complaints while resident in Europe. What environmental change is responsible for this situation? These problems are discussed in this two-part article. Quantity and quality, soil, storage, adulteration and preparation of food in relation to metabolism are analyzed in this first installment.

[1]Editorial: JADA **49**:719 (Dec.) 1954.
[2]Jolliffe, N.: Treatment of Neuropsychiatric Disorders with Vitamins, JAMA **117**:1496 (Nov. 1) 1941.
[3]Spies, T. D.: Influence of Pregnancy, Lactation, Growth, and Aging on Nutritional Processes, JAMA **153**:190 (Sept. 19) 1953.
[4]Danziger, L.: Anoxia and Compounds Causing Mental Disorders in Man, J. Dis. Nerv. Syst. **6**:365, 1945.

Factors Related to Diet and Health

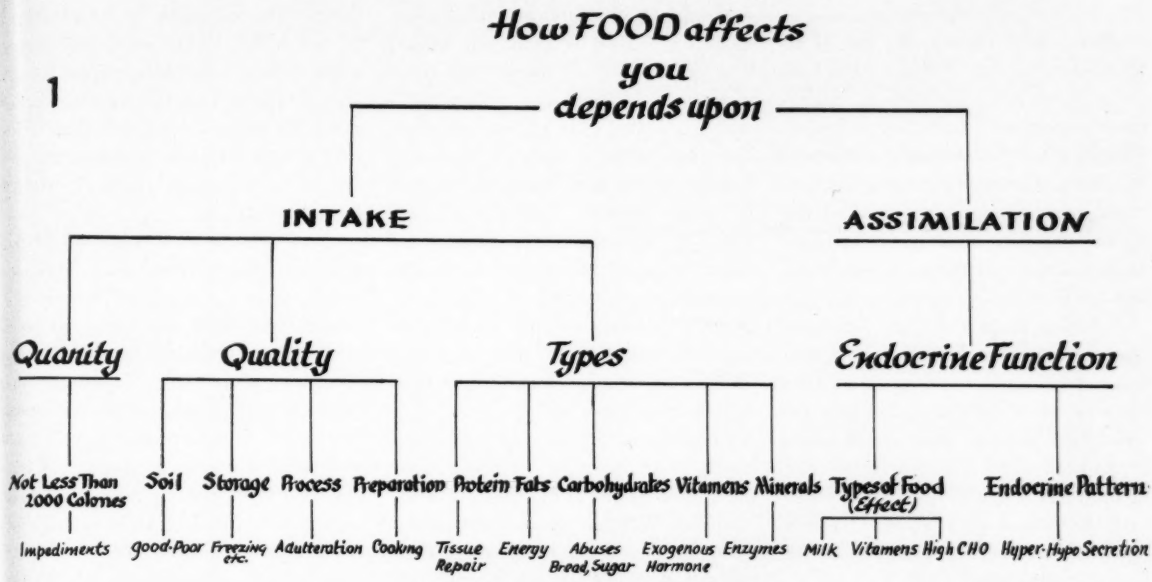
Most of the diseases discussed in pathology texts, particularly the degenerative diseases, were produced by McCarrison[5] in thousands of animals simply by manipulating the diet. Synthetic diets were not employed but those in use by human beings, both healthy and chronically ill, were effected. Similar observations were made by Price[6] in many parts of the world. These findings were further corroborated by the investigations of Pottenger[7], Hawkins[8], and Page[9], both in animals and human beings.

Extensive Study Needed — Paul Dudley White[10] recently stated, "there is great need for worldwide study of eating and other living habits to break the existing deadlock in unsolved problems of heart disease . . . Diet studies seemed especially important because it is quite likely that we may end up with this as the most remedial factor . . . Various diet theories must be dealt with . . ."

Technique of Administration Important—Why the usual dietetic measures employed in treating various disorders fail to secure a remission and frequently make the patient worse, may be explained by the practioner's lack of familiarity with the *technique* of administration of food as a therapeutic measure. Every therapeutic agent has its own mode or technique of administration. While technique is beyond the scope of this article, an important aspect of the therapeutic use of food is the frequently repeated statement that food control is impractical and is not readily accepted.

Patient's Cooperation Required— This charge has also been made against other therapeutic agents used

[5]McCarrison, Sir Robt., and Sinclair, H. M.: Nutrition & Health, new revised ed. London, Faber & Faber, 1953, pp. 33, 34 and 35.
[6]Price, Weston A.: Nutrition & Physical Degeneration, ed. 5, New York, Paul B. Hoeber, Inc., 1950.
[7]Pottenger, Francis M., Jr.: The Effect of Heat-Processed Foods and Metabolized Vitamin D Milk on the Dentofacial Structures of Experimental Animals, Am. J. Orthodont. & Oral Surg. **32**:467-485 (Aug.) 1946.
[8]Douglas, John Scott: Nutrition's Growing Role in Dental Therapy, TIC, 1-8 (March) 1950.
[9]Page, Melvin E.: Degeneration-Regeneration. St. Petersburg, Fla., Page Foundation, 1949.
[10]White, Paul Dudley: AP Dispatch, Philadelphia Inquirer (Dec. 3) 1955.



1. *The elements of food metabolism.*

by both dentists and physicians. Examples are the lack of response often encountered when the patient is enjoined to brush his teeth, or the refusal to accept the physician's advice to give up smoking even though the patient's life may depend upon it. Does this invalidate the therapy? In the words of Boyd, "Even though the physician were to offer advice and guidance of an effective nature to each of his patients, only the minority would observe his counsel."[11]

Intake and Assimilation

Clinical experience has demonstrated that the metabolism of food must be considered from two aspects: (1) intake, and (2) assimilation. The effect of the intake upon the body is governed by the quantity of food ingested, its quality, and the types of food presented to it. The assimilation of food which enters the body is controlled by endocrine function. In its simplest terms, diet is the substance that is taken into the body; nutrition is the product that arrives at each cell of the body (Fig. 1).

Quantity

When instincts have not been dulled by civilized living and can be depended upon as guides, appetite, by governing the desire for food, may exercise the primary limitation of the quantity of food ingested to satisfy body requirements in a healthy person. Hunger and aroma are familiar stimulants to the appetite.

Impediments to Ingestion—Some common impediments to ingestion are the following:

1. The nonavailability of food. Famine, economic limitation to procurement, imprisonment, or institutionalized living may exist.[12]

2. Dietary surveys reveal that ignorance of the ingredients in a balanced diet, or bizarre food habits frequently result in an unbalanced intake.

3. Chronic alcoholism always limits the desire for food.

4. Congenital malformations such as stenosis or cleft palate may make eating so difficult that intake may be markedly reduced.

5. Toxemias of pregnancy with attendant nausea, or vomiting, influence the volume of food ingested.

6. Lack of teeth may limit the amount of food eaten.

7. Disease may contribute to a diminished intake. Among these may be (a) colitis, (b) dyspepsia, (c) ulcers, (d) dysphagia, (e) diets to control allergies, (f) psychotic states with anorexia or mental fixation against some particular food.

8. Operations such as gastrectomy often limit the food intake.

9. Reducing diets, in which calories are always weighed in the balance, are a common cause of malnutrition due to lack of essential foods in the diet. Patients often read about and adopt a faddist diet, or worse yet, fasting. Adoption of such measures can have serious consequences. Deaths by malnutrition and starvation therefrom have been recorded.

Factors Impeding Absorption—Impediments to absorption may drain off nutrients thus diminishing the quantity of food reaching the tissues. The constant use of mineral oil for constipation, or the use of milk of magnesia for the same purpose, the use of charcoal or the antibiotics, are factors in loss of nutrients.[13]

Mineral Oil: Dissolves out the fat soluble vitamins

Milk of Magnesia: Dissolves out

[11]Boyd, J. D.: Epidemiologic Studies in Dental Caries, J. Pediat. **445**:578-90 (May) 1954.

[12]Biskind, M.S., and Williams, R.R.: Nutritional Survey at a Children's Institution; Incidence of Avitaminotic Lesions & Effects of Therapy, Am. J. Digest. Dis. **14**:121-130 (April) 1947.

[13]Bicknell, F., and Prescott, F.: The Vitamins in Medicine, ed. 3, New York, Grune & Stratton, 1953, pp. 223-226; 675, 676.

the water soluble vitamins

Charcoal: Removes thiamine and riboflavin

Antibiotics: Deplete the gut of vitamin B complex as well as the bacterial flora that are normal, beneficial inhabitants of the lower bowel. The diarrhea that results from intake of these substances creates such a rapid passage of the contents of the bowel that even if properly digested, absorption of nutrients is not possible.

Calories Required for Balanced Diet—In order to ingest an adequate amount of food, not less than 2000 calories of a *balanced diet* are required to remain above starvation level. Less than optimum quantities of food are undesirable but the other extreme is also ill advised. Overeating places enormous strain upon the human metabolism.

Quality

If an adequate quantity of food enters the body, but its quality is poor, the resultant nutrition will be affected as if an inadequate quantity were consumed. The four factors which affect the quality of food, are (1) the soil from whence it comes, (2) the storage or age of the food, (3) processing or adulteration, and (4) the preparation of food for the table. To select the proper food of good quality, human beings are endowed with a sense of taste. The taste of a food consists of its aroma, texture, and flavor. A fresh, ripe apple of good quality, for example, has a distinctive, pleasant aroma, its texture is firm, not mealy, and it can therefore be expected to have a delicious flavor.

Soil—"Plants grown upon depleted or deficient soils are lacking in minerals, vitamin content and palatability. They will produce malnutrition in the man or animal that eats them."[14,15] A factor that heightens quality is organic farming. Brown states, "Organic farming is one method which produces vegetables with a high nutritive value."[16]

Health and Soil Fertility—Albrecht[17] demonstrates the relationship of health and soil fertility. "Any healthy living tissue is possible only when it is supplied regularly with the different essential amino acids (constituents of protein) and in the required amounts of each per limited unit of time. Only by getting these essentials, that is, the proper proteins, can the cells of any kind of body (a) grow or enlarge, (b) protect themselves from being taken over by other proteins (disease germs), and (c) reproduce their kind. Carbohydrates and fats do not carry forward these functions of the living tissue. The majority of plants produce carbohydrates. The minority grow complete proteins, and then only on fertile soils."

Location of Fertile Soil—Albrecht has located the most fertile soils of the United States in the midcontinent, along the 98th meridian of longitude, west. In this area, the highest concentration of farms was found and the best balanced precipitation-evaporation ratio. Farther west, evaporation exceeds precipitation; east of this area, precipitation exceeds evaporation, thereby leaching out the soil.

High Quality of Crops: In this fertile midcontinent, the hardest or high protein wheat is grown. The greatest concentration of beef-raising and the lowest amount of pig-raising exists in these states. Beef-raising requires protein; pigs feed on carbohydrates. As would be expected where protein is grown, the soil has a high calcium content.

Caries Rate Affected: Albrecht also notes that "a survey of the condition of the teeth of the inductees into the Navy during World War II revealed the least number of caries per mouth in the midcontinent, that is, on the better protein-producing soils."[18] The caries rate rose both to the east and to the west of this area, two states wide, west of the Mississippi River. New England had the highest caries rate. Albrecht also suggests that "Bioassays, not chemical analyses, are required as measures of food quality in nutrition."

Factors in Soil Depletion—Much soil has been washed away and depleted. This has occurred because the organic matter (humus) has not been replaced and chemical fertilizers have been used instead.[19] Where at one time the soil produced a high protein wheat, it now produces only carbohydrate crops such as corn. Even the corn is of poor quality, which is evidence of the decline in quality of foods raised on these soils.

Hybrid Varieties Developed: Weaker plants do not have the stamina to resist pests, so that hybrid varieties have been developed. These hybrids are sterile and of poor quality. This fact becomes important when it is known that hybrid corn, for example, does not contain vitamin B_{12}; open-pollinated corn does contain this important vitamin.

Deterioration of Nutrients in Bread: "In 1840, one ounce of genuine unspoiled whole wheat bread made of whole stoneground wheat (not flour) contained thirty units of vitamin B_1. One hundred years later one ounce of white bread contained not thirty, but *five* units of vitamin B_1."[20]

Some Effects of Food Deficiencies—These deficiencies in many foods today have affected man and animal alike: (1) Cows now drop dead from heart disease, others are afflicted with diabetes.[21] (2) A lion with arthritis is taken to Florida for a cure that will not be found. (3) Bushman, the Chicago Zoo's famous gorilla, died from lack of proper food, reportedly a protein deficiency.[22]

Animals Subject to Human Disease: It would seem reasonable to suppose that investigations would be made as to the kind of foods eaten by animals in their natural habitat before deciding what to feed them. Imagine a wild animal in its natural environment eating whole wheat

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[14]Forman, J.: Soil on which Food is Grown Can Make a Difference, Modern Nutrition **9**:27 (Jan.) 1956.

[15]Rowlands, M. F., and Wilkinson. B.: Biochem. J. 24: No. 1, 1930; cited by Picton, L. J.: Nutrition and the Soil, New York, Devin-Adair, 1949, p. 86.

[16]Brown, H. D.: Vitamins and Minerals in in the Production of Vegetables, in Soil, Food and Health, Columbus, Ohio, Friends of the Land, 1949, p. 169.

[17]Albrecht, Wm. A.: Proteins, paper delivered at convention of Am. Soc. Anthropomet. Med. and Nutrition, St. Petersburg, Fla., (April 21) 1955.

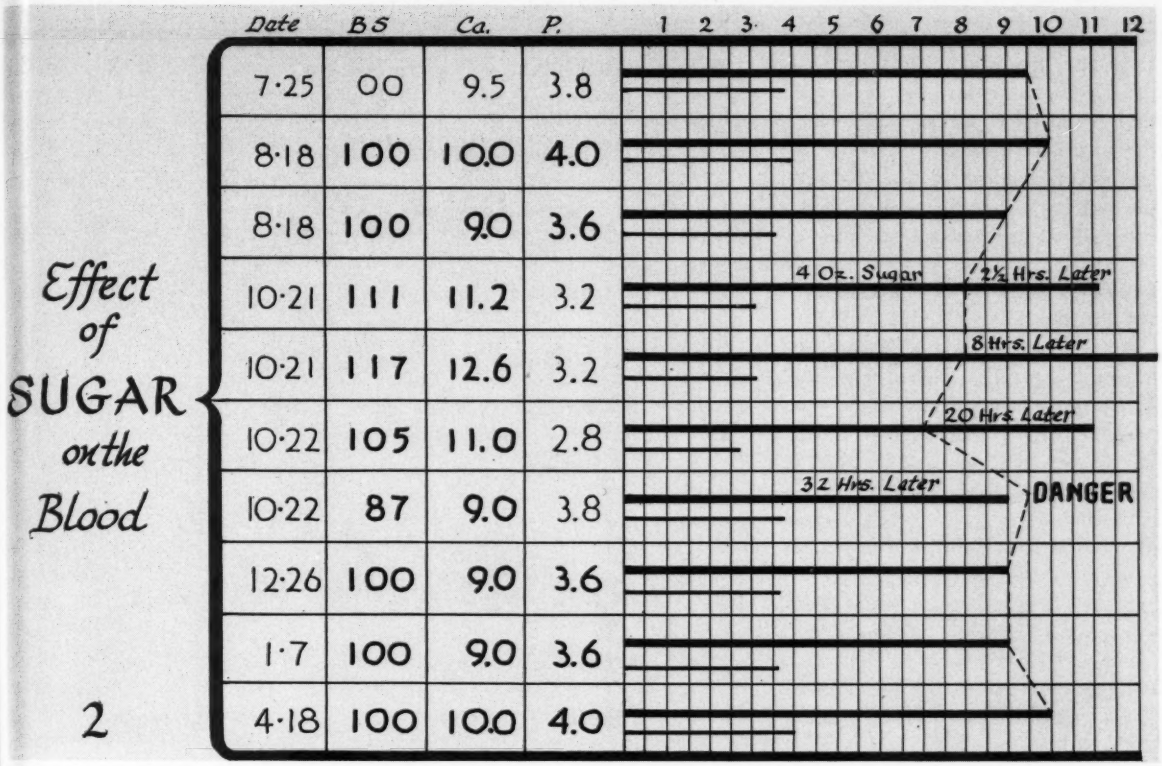
[18]Albrecht, Wm. A.: Pattern of Caries in Relation to the Pattern of Soil Fertility in the United States, D. J. Australia **23**:1-7 (Jan.) 1951.

[19]Wickenden, L.: Make Friends with Your Land, New York, Devin-Adair, 1949.

[20]Norman, N. P.: Fundamentals of Nutrition for Physicians and Dentists, A. J. Orthodont. & Oral Surg. **33**:780-785 (Nov.) 1947.

[21]Pottenger, Robt. T.: What Can You Expect from Good Nutrition? Mod. Nutrition 8:10 (February) 1955.

[22]Bushman the Gorilla Died for Lack of Right Type Food, Chicago, Feb. 4, 1955. The Philadelphia Evening Bulletin (February 4) 1955.



2. ***The effect of sugar on the blood. B.S. is blood sugar with a normal value of 100. Ca. is calcium which combines completely with P. which is phosphorus, in the ratio of 2½ to 1. The long, heavy horizontal line is the calcium; the shorter line beneath it is the phosphorus. The vertical line at the end of the calcium line is the point at which both minerals are combined without any excess of either element. The effect of the initiation of 4 ounces of sugar is shown on the date 10-21, which shows a rise of blood sugar and an increase of calcium and a drop in phosphorus.***

raisin bread, milk, and multiple vitamins. These items were included in the diet of Bushman, who it was reported was somewhat overweight. Veterinarians observe that animals are now subject to the same baffling diseases as human beings, particularly the degenerative diseases, and suffer these diseases earlier in life.

Deterioration in Plant Life—Plants grown on deficient soils become weak and more prone to pest infestation. Consequently, the use of chemical sprays is increased while the problem of insects is intensified. Pests have become immune to sprays and proliferate beyond their former numbers, thereby disturbing the natural balance of antagonistic insects. Of even greater concern is the disturbance of soil microbiology, the destruction of wild life, poisoning of man and animals, [23,24,25] and the creation of new diseases.[26,27] Food raised on such soils has become unpalatable[28] and frequently a source of danger.[29,30]

High Fertility of Chinese Soil—It is significant that the Chinese, without the use of chemical sprays or chemical fertilizer, have the highest yield per acre of any nation of the world.[31] They have maintained this yield as well as the fertility of their soil for centuries.

Organic Farms Successful— In our own country as well as in others[32],

[23]Biddulph, C., et al.: The Toxicity of DDT and Methoxylchlor to Farm Animals and Its Accumulation in Products Consumed by Man. Chemicals in Food Products, Part I, 249-268 (May 10) 1951. Washington, U.S. Gov't Printing Office (May) 1951. Also, Carter, R. H.: Claborn, H. V., Woodward, G. T.; and Ely, R. E.: Pesticide Residues in Animal Products, the 1956 Year Book of Agriculture (Animal Disease), U. S. Dept. of Agriculture, Washington, D.C., 1956, p. 143.

[24]Boswell, V. R.: Residues, Soils, and Plants, Yearbook Separate, No. 2328, Reprinted from Pages 284-297 of the 1952 Yearbook of Agriculture, Division of Publications, Office of Information, U.S.D.A., Washington, D.C.

Foster, A. C.; Boswell, V. R.; Chisholm, R. D.; Carter, R. H.; Gilpin, G. L.; Pepper, B. B.; Anderson, W. S.; and Gieger, M.: Some Effects of Insecticide Spray Accumulations in Soil on Crop Plants, Technical Bulletin No. 1149, U.S. Dept. of Agriculture in cooperation with New Jersey and Mississippi Agr. Experiment. Stations, Supt. of Documents, U.S. Gov't. Printing Office, Washington, D.C., (Aug.) 1956.

[25]Clinical Memoranda on Economic Poisons, Public Health Service Publication No. 476, U.S. Dept. of Health, Education, and Welfare (April 1) 1956, Supt. of Documents, U.S. Gov't. Printing Office, Washington, D.C.

Report of Testimony by representatives of the American Medical Association before Congressional Committee to Investigate Chemicals in Foods. Reported in JAMA **152**:12 (Aug. 1) 1953.

[26]Chlordane: Queries and Minor Notes, JAMA **157**:485 (Jan. 29) 1955.

Lee, A. M.: Hyperkeratosis, Yearbook of Agriculture, Washington, D.C., U.S.D.A., 1956, pp. 273, 274, 275. U.S. Gov't. Printing Office.

Mott, L. O., and Manthei, C. A.: Miscellaneous Diseases of Cattle, Yearbook of Agriculture, Washington, D.C., U.S.D.A., 1956, p. 327. U.S. Gov't. Printing Office.

[27]Freeman, G., and Epstein, M. A.: Therapeutic Factors in Survival After Lethal Cholinesterase Inhibition by Phosphorous Insecticides, New England J. Med. 253:266-271 (Feb. 10) 1955. Also Council on Pharmacy and Chemistry. Pharmacologic and Toxicologic Aspects of DDT (Chlorophenothane, U.S.P.) JAMA **145**:728 (March 10) 1951.

[28]Reynods, H.; Gilpin, G. L.; and Hornstein, I: Flavor and Benzene Hexachloride Content of Peanuts, Grown in Rotation with Cotton Dusted with Insecticides Containing Benzene Hexachloride. Circular No. 952 (December 1954), U.S. Dept. of Agriculture, Superintendent of Documents. U.S. Gov't. Printing Office, Washington, D.C.

[29]Wickenden, L.: Our Daily Poison, New York, Devin-Adair Co., 1955, pp. 22-34.

[30]Radeleff, R. D.; Woodward, G. T.; Nickerson, W. J.; and Bushland, R. C.: The Acute Toxicity of Chlorinated Hydrocarbon and Organic Phosphorous Insecticides to Livestock, Technical Bulletin 1122, U.S. Dept. of Agriculture, Supt. of Documents, U.S. Gov't. Printing Office, Washington, D.C. (November) 1955.

[31]de Castro, J.: The Geography of Hunger, Boston, Little, Brown and Co., 1952, p. 143.

[32]Howard, Sir Albert: An Agricultural Testament, London, Oxford University Press, 1940, p. 161.

thousands of acres are farmed organically and are economically successful. These organic farms are evidence that better food can be raised without incurring the dangers and frustrations of chemical farming. Because the soil is the basic source of food, it merits extensive consideration.

Storage and Preservation Of Food

The longer a food substance is stored or preserved beyond maturity or slaughter, the greater is the opportunity for oxidation and spoilage, thereby reducing its food value.

Loss of Nutrients from Age—"Experiments show that vitamin losses in fresh vegetables after forty-eight hours at room temperatures are as high as 70 per cent in lettuce and spinach, 65 per cent in broccoli and chard, and 25 per cent in green beans. Potatoes may lose from 30 to 50 per cent of their vitamin C after one to six months' storage."[33] The importance of freshness may be learned by taking several vegetables off one stalk and eating each at different intervals after storage. Exposure of orange juice to the air for half an hour may result in the loss of most of the vitamin C. Eggs kept in storage too long deteriorate. That butter, olive oil, or other vegetable oils stored for long periods become rancid is well known. Meat, seafood, or poultry cannot be kept long, even if refrigerated, without a definite loss of food value, often to a harmful degree.

Preservation for Limited Periods Advised—It is evident that food must be eaten as fresh as possible and before spoilage, so that its quality may be unimpaired. Preservation of foods should only be for limited periods of time if food values are to be preserved. Preservation should only be by the old, tried and tested methods of short refrigeration, smoking, or drying. The use of chemical preservatives only serves to deceive the consumer as to the freshness of food, because it is used to mask deterioration.[34]

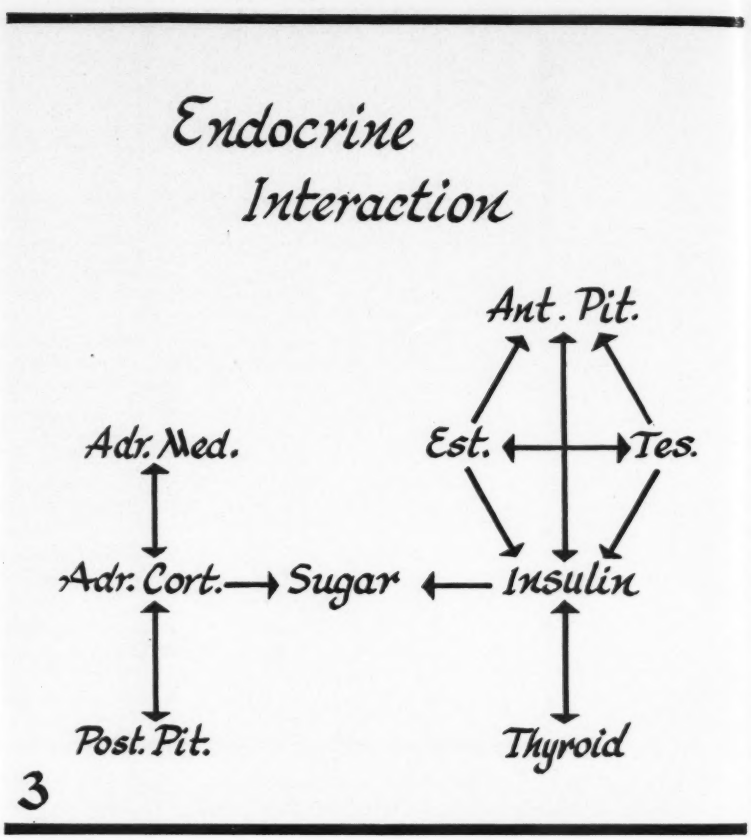
Processing and Adulteration of Food

In this age of food technology, one of the greatest factors contributing to ill health is the destruction of nutrients by food processing or adulteration. It has been said that "Scarcely a single article of diet arrives on our tables unembellished by the technologist's art."[35] Most deplorable, is the fact that food is rarely manipulated for the benefit of the consumer.

Fractionization Responsible for Low Quality Foods — When a plant or vegetable food is refined, its performance changes to that of a drug or crystalline chemical. This is because a food is a complex substance and its digestion involves complex enzymatic actions, many of which are still not completely understood.

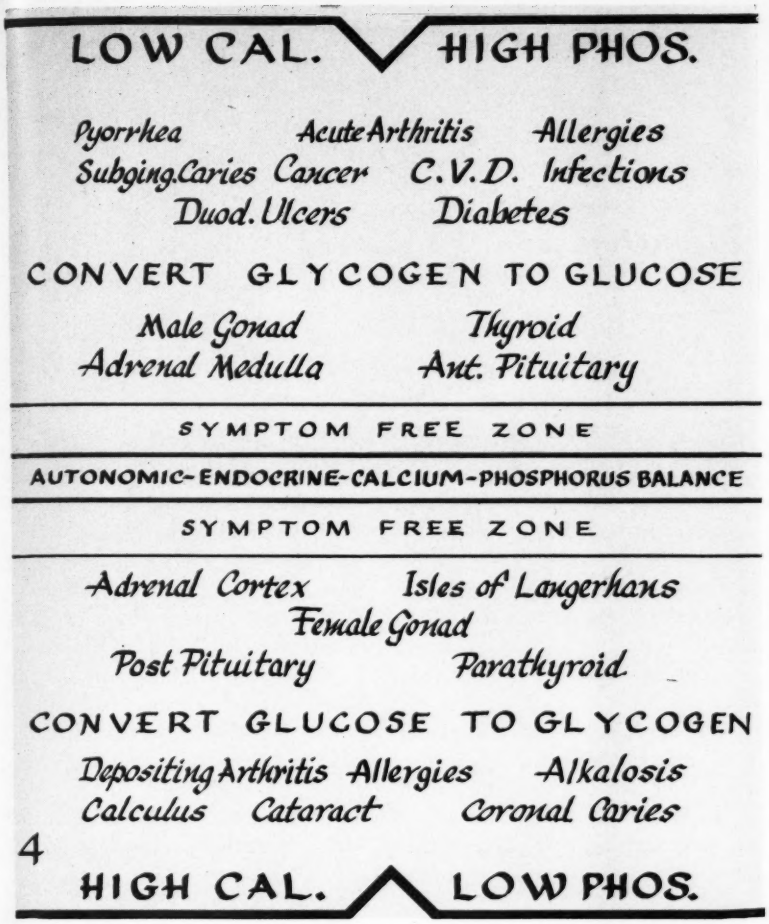
Harmful Results from Additives—(1) A more recent danger, but an ever-increasing one, is the administration of hormones,[36,37] (generally diethylstilbestrol) to poultry and cattle for eventual consumer use.

(2) Chemical additives have become a serious problem,[38] cognizance having been taken of these substances as a factor in the production of cancer, by the conclave in Rome of experts from twenty-one nations under the sponsorship of the International Union Against Cancer. A highly disturbing report was made by the representative of the United States, W. C. Hueper, M.D., Chief of the Environmental Section, National Cancer



3. ***Endocrine interaction observed and utilized clinically. Abbreviations: Ant. Pit.: Anterior Pituitary. Est.: Estrogen. Tes.: Testosterone. Adr. Med.: Adrenal Medulla. Adr. Cort.: Adrenal Cortex. Post. Pit.: Posterior Pituitary.***

[33]Bruner, C.: Principles of Nutrition Essential for the Achievement of Health, Mod. Nutrition **9**:6 (February) 1956.
[34]Wickenden, L.: Our Daily Poison, New York, Devin-Adair Co., 1955, p. 157.
[35]Consumer Research Bulletin (March) 1954, quoting the Medical Press (a British Medical Journal).
[36]Biskind, M. S.: The Technic of Nutritional Therapy, Am. J. Digest. Dis. **20**:65 (March) 1953.
[37]Cancer Suspects, Time Magazine **68**:70 (August 27) 1956.
[38]Platt, B. S.: Human Nutrition and the Sophistication of Foods and Feeding Habits, British M. J. **4907**:179 (January 22) 1955.



4. ***Endocrine function, disease susceptibility, biochemical balance. The middle zone is that of endocrine balance, calcium-phosphorus balance and is symptom free. Above the middle zone is the tendency to sympathetic dominance, catabolism, and the tendency to a high phosphorus with low calcium. C.V.D. is cardiovascular disease. Below the middle zone is the tendency to parasympathetic dominance, anabolism, and the type of disease susceptibility with the tendency to a high calcium and low phosphorus.***

Institute[39,40] of Washington, D.C.

(3) It is common practice to use artificial colors and/or flavors to deceive the consumer into thinking that the quality is good, when in fact it is vastly inferior.

Comparison of Whole Wheat and White Flour

Since bread is a staple food, it is useful to compare whole wheat flour with white or enriched flour to which, after the removal of several important parts of the wheat berry, a few synthetic, inorganic chemicals are replaced but of course, *not as many as were removed.*

Nutritional Content of Whole Wheat Flour—Whole wheat flour contains about 1/5 more protein than white flour, about twice the fat content, but less carbohydrate and fewer calories. Whole grain flour contains more than *twice the calcium,* about *four times the phosphorus,* more than *three times the iron, seven times the thiamine, twice the riboflavin,* more than *four times the niacin than white flour.*[43]

Minerals Lost in Milling White Flour—These are overlooked and forgotten: completely ignored, is that highly important vitamin, E.[41,42,43,44] Despite the fact that white flour has been "enriched" with inorganic chemicals, the failure to replace all of its nutritional elements renders it little better than ordinary white flour. McCollum states, "The term 'enriched' is false and misleading, and it creates too great expectation of what is accomplished."[45]

White Flour Will not support Life—Experiments have been made which show that refined white flours will not support life. The same applies to refined breakfast cereals. To obtain the equivalent in nutrients from refined grains, at least twice as much must be eaten and still the subject emerges short-changed of important food elements. Perhaps this is why our greatest national deficiency is in vitamins B and E.

Inferior Quality Masked With Chemical Action

An example of this is the marketing of unripe oranges, and other fruits, from which the green color (chlorophyll) has been removed by the use of ethylene gas[46] and then colored with coal tar dyes which have been banned as poisonous by the Food and Drug Administration.[47] One of these dyes has been used to color candy, cakes, cookies, carbonated beverages, desserts, hot dogs, and other meat products. That these dyes, "have been shown to be alarmingly toxic," was held by the U.S. Circuit Court of Appeals.[48]

Carcinogenic Dye—Butter, to which salt has already been added as a preservative, usually is colored yellow (to deceive the consumer into think-

(*Continued on page* 19)

[39]Hueper, W. C.: A Practical Approach, Saturday Review **39**:61 (October 6) 1956.
[40]Ibid.: Potential Role of Non-nutritive Food Additives and Contaminants as Environmental Carcinogens, Arch. Path. **62**:218, 1956, in Am. J. Clin. Nutrit. **5**:102 (Jan.-Feb.) 1957.
[41]Bicknell, F., and Prescott, F.: The Vitamins in Medicine, ed. 3, New York, Grune & Stratton, 1953, p. 627.
[42]Biskind, M. S.: The Technic of Nutritional Therapy, Am. J. Digest Dis. **20**:59 (March) 1953.
[43]Watt, B. K., and Merrill, A. L.: Composition of Foods. Agriculture Handbook No. 8, U.S. Dept. of Agriculture. Superintendent of Documents, U.S. Gov't. Printing Office, Washington, D.C. (June) 1950.
[44]Wilder, R. M., and Keys, T. E.: Handbook of Nutrition 14, JAMA **120**:534 (October 17) 1942.
[45]McCollum, E. V.: Reported in the Philadelphia Evening Bulletin (June 14) 1948.
[46]Citrus Industry of Florida, Department of Agriculture. Tallahassee (Feb.) 1954.
[47]Three Orange Dyes are Banned (UP) The Philadelphia Evening Bulletin (August 11) 1956.
[48]U. S. Ban on 3 Coal Tar Colors is Upheld (AP) The Philadelphia Evening Bulletin (August 11) 1956.

Reproduction and Duplication of RADIOGRAPHS

CHARLES DILLON, D.D.S., L.D.S., Fort William, Inverness-Shire, Scotland

This article presents procedures which enable the dentist to overcome some of the numerous difficulties encountered in duplicating and reproducing x-rays.

Procedure One

If a photographic enlarger is available, the procedure is uncomplicated. The following steps are taken:

1. Place the film to be duplicated in the enlarger and focus the image on to a "dummy" plate of the size to be used, over which a piece of white paper has been pasted.

2. When a satisfactory image has been focused, turn off the lights, substitute an unexposed plate or film in the exact position, and project the image on to this plate which is then developed. Contact prints from this will give a reproduction of the x-ray on paper.

3. If it is desired to reproduce the negative itself, place the result of the first step in the enlarger and again project the image on to a second unexposed plate or film. The result will be a duplication of the original x-ray film.

4. If an enlarger is not available, good reproduction and duplication can still be obtained by contact printing from the original negative on to an unexposed x-ray or photographic film.

Procedure Two

1. Place the film to be reproduced or duplicated over an unexposed x-ray film enclosed in an ordinary photographic frame and expose to a quick flash of light.

2. Develop and fix in the usual way.

3. A contact print of the resultant "positive-on-film" will give a reproduction of the original x-ray film on paper.

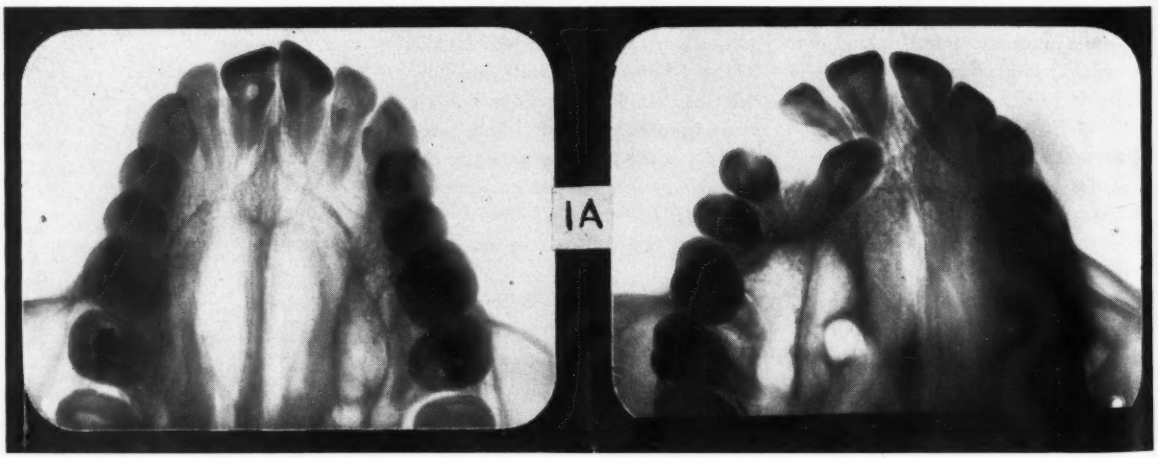
4. If it is desired to reproduce the x-ray negative itself, place the "positive-on-film" obtained in the first step over another unexposed film and again expose to light, develop and fix.

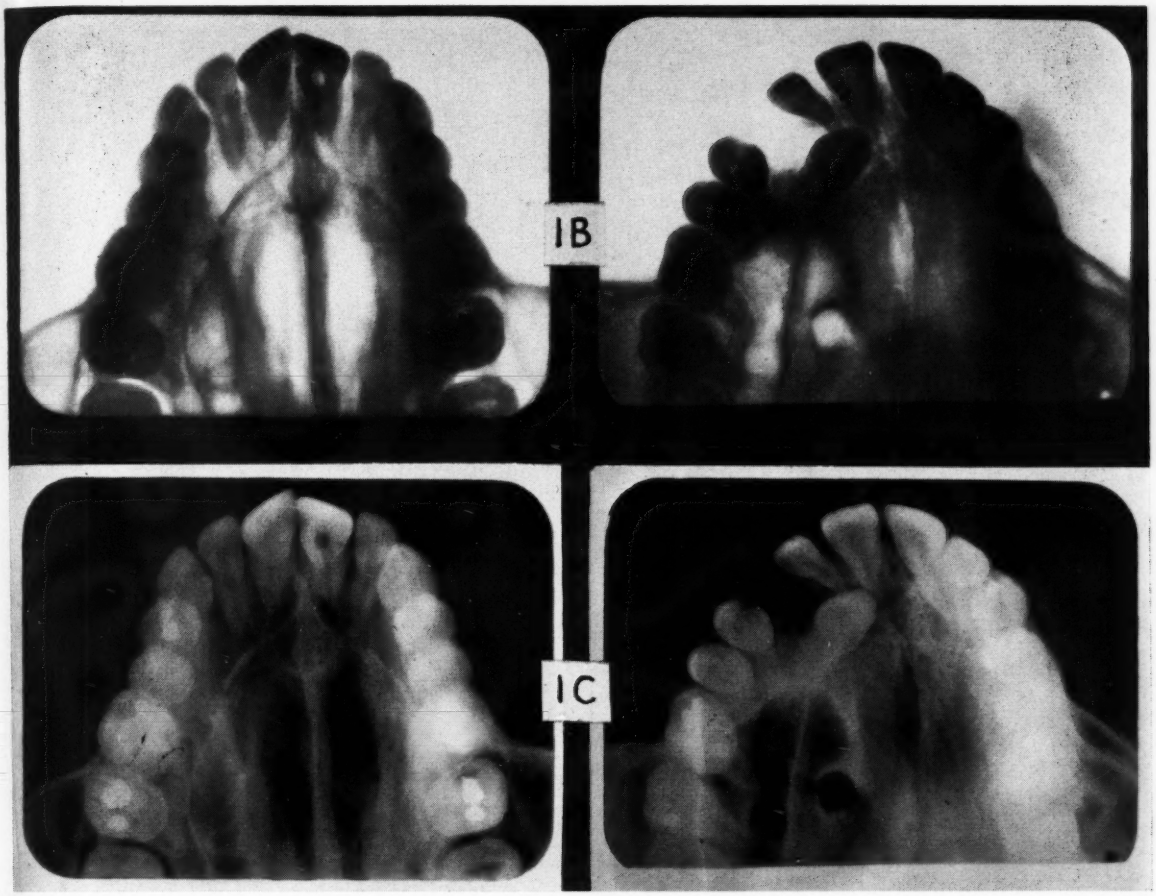
Use of X-ray Paper

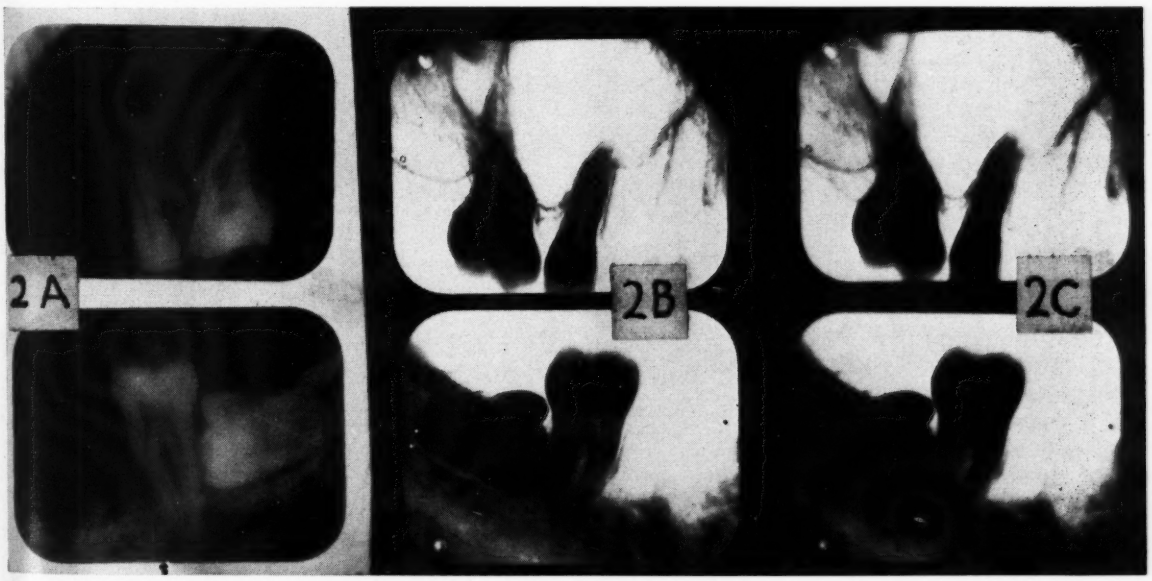
The author has investigated the possibility of using x-ray paper instead of films for taking x-rays. The paper was put in a cassette between Watson's intensifying screens, and exposed by the usual technique. Good results can be obtained with care, and even fine detail can be reproduced with accuracy.

Advantages — (1) The method is

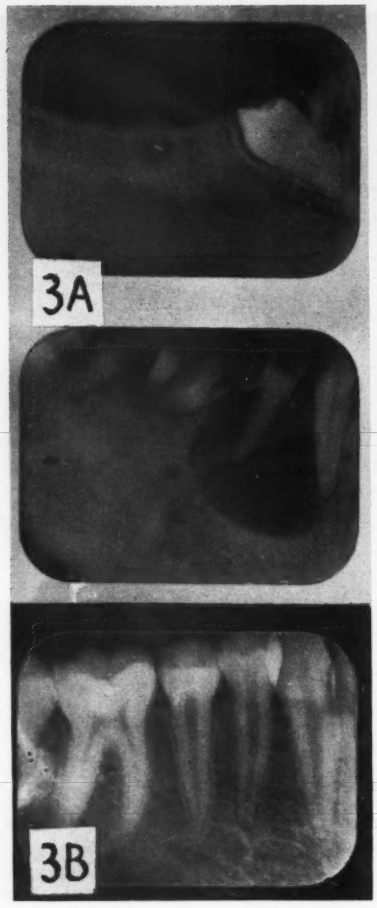
1. *(Series)—Shows reproduction and duplication of two occlusal films: a vomeronasal or incisive cyst and an impacted cuspid.*
1A. *Shows reproduction of x-rays.*
1B. *A print from the duplicated negatives.*
1C. *Print from the original negatives.*







2. (*Series*)—*Shows reproduction and duplication of two intraoral films.*
2A. *Shows the reproduction of the x-rays.*
2B. *Print from the duplicated negatives.*
2C. *Print from original negatives. The last two prints were done together on a single sheet of contact paper, showing uniformity of results.*



3A. *Shows reproduction of x-rays on Sellechrome photographic film.*
3B. *A reproduction using an x-ray film.*

useful for examining the occlusion for orthodontic study, noting the presence or absence of teeth in a dentition, for a general survey of right and left side.

(2) Instruction can be given while the patient is seated in the chair holding the picture, instead of being obliged to move over to a viewing box or to peer at the film before an electric light bulb.

(3) This method is of value to the dentist also for examining the position of impacted teeth during an operation. Without having to turn around to examine the film the sur-

4. *A reproduction of a photomicrograph of the cyst shown in Figure 1.*

5. *Shows a lateral jaw plate made on x-ray paper rather than on film.*

geon can have the film held before him by an assistant, or the film may be placed at a convenient position on the bracket table.

(4) Such a film is best examined for detail, however, when held at an angle before a strong light.

Materials Used

Regular films were used and Eastman x-ray developer. Any good bromide paper can be used. Eastman bromide paper was used for some prints, and a Dutch paper called Gevaert for others. For ideal results fresh developer should be used. Projecting from a photographic developer is easily the best way of duplicating films or reproducing the negative for publication, because intraoral films sometimes require a little enlargement to bring out certain features.

Comment

Contact printing of a negative upon a film permits light to pass freely. The exposure to light must therefore be a quick flash, the light source must not be too bright, and should be diffused.

In developing the result a little experience is required to avoid overdevelopment. Such a film will take from 20 to 40 seconds to develop, depending on the developer and type of film used.

Caladh, Fort William
Inverness-Shire, Scotland

Fundamentals of Food Metabolism in Clinical Practice

(*Continued from page* 15)

ing it rich in vitamin A) with a coal tar dye called 'butter yellow' (paradimethylaminoabenzene) which is carcinogenic.[49]

All Chemical Additives Suspect—Many more chemicals added to foods for various reasons have never been tested for toxicity to man. Any chemical, not naturally a part of a food but which is an additive, should be looked upon with suspicion.

Preparation of Food

The preparation of food for the table is another hurdle which must be surmounted if food is to retain all of its original quality. The moment that food is exposed to the air, oxidation takes place. The loss of vitamin C from exposed orange juice has been mentioned. The application of heat to food in cooking, not only accelerates oxidation, but also is destructive of vitamins, enzymes, and proteins. The pasteurization of milk is destructive of many of its nutrients.[50] The overheating of fats is known to impart carcinogenic properties.[51] Horn[52] reports that animal proteins such as those found in meat, milk, and eggs, are less easily destroyed by heat than vegetable proteins. High or prolonged heat is destructive to both, together with any enzymes that may be present. Cooking in an excess of water, or even washing vegetables too much, may dissolve out the water soluable vitamins. All these factors must be considered in the preparation of food.

End of First Installment

Gay and *Church Streets*

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[49]Kleiner, I. S.: Human Biochemistry, ed. 3, St. Louis, C. V. Mosby Co., p. 622.
[50]Rabben, M.: Is Milk the Perfect Food, DENTAL DIGEST **62**:398-402 (Sept.) 1956.
[51]Nutrition in Relation to Cancer, *Cancer* Bulletin **5**:136 (Nov.-Dec.) 1953.
[52]The Man Who May Revolutionize Cooking. The Baltimore Sun. (Sunday Rotogravure Section), April 11, 1954.

Canker Sores

Problem

A woman, aged 50, had a cholecystectomy, followed one year later by subtotal gastrectomy and gastroenterostomy, the latter for recurrent duodenal ulcers. Within six weeks after the second operative procedure, she lost 22 pounds in weight and began to have painful canker sores on the lining of the mouth, lips, and tongue. Her dentist could not account for the oral conditions. She has been treated with high dosages of vitamins B and C, minerals, liver, iron, and stomach concentrate, orally and parenterally with no effect. Suggestions as to treatment are requested.

Discussion

Nothing is known about the nature of canker sores or aphthous stomatitis, and there is no evidence whatsoever to support the assumption that it is connected with nutritional deficiency of any kind. Aphthous stomatitis has been suspected of allergic, psychosomatic, or infectious origin. The latter assumption is most probably correct. A virus is also suspected although it is clearly different from a herpes simplex virus.

Treatment—Rinsing of the mouth with solutions of the broad-range antibiotics aureomycin or terramycin is exceedingly effective in combating this condition. The following procedure is prescribed: two soluble chlortetracycline tablets (50 milligrams each) are dissolved per ounce of water, and the patient is instructed to use the solution as a mouthwash for several minutes. The solution should not be swallowed.

Recurrence Possible—The treatment procedure suggested is repeated every two to four hours, with the solution being freshly prepared on each occasion prior to use. This method of treatment provides relief of symptoms within 24 hours and also promotes healing. It must be emphasized, however, that such therapy does not prevent recurrence and is effective only as long as it is being used.

Adapted from Queries and Minor Notes, *Journal of the American Medical Association* **161**:300 (May 19) 1956.

Anesthesia for EXTRACTIONS

Without Lip Sensations

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DIGEST

One of the chief complaints by patients against the use of a local anesthetic is the feeling of fullness and numbness of the lips and tongue that accompanies the injection, and which lasts for some time after the operation has been completed. In addition, in the case of an infraorbital injection, distortion of the lip on the side of the injection is often present. The technique described in this article has eliminated all of these uncomfortable sensations for the patient while still producing profound anesthesia for the removal of a tooth, or teeth. The technique has been successful for the author in almost 100 per cent of extraction cases.

Accepted Anesthetic Techniques

The usual methods of producing anesthesia are (1) the mandibular and/or mental blocks in the lower jaw, and (2) the infraorbital and posterior superior alveolar nerve blocks in the upper. Infiltration anesthesia in the anterior regions of both jaws is a method used by many practitioners. In all of these methods, except the posterior superior alveolar block, the "lip symptoms" are employed as a test for anesthetization of the tooth. In conjunction with these injections, a lingual or palatal injection must also be employed. This is frequently the most painful procedure of all to the patient. This injection is eliminated entirely with the technique presented.

Description of New Technique

The new technique is basically an infiltration technique. The difference between this method and the others is the *site* of presentation: the point of the needle is inserted into the interdental papilla on both sides of the tooth to be removed and the solution deposited slowly under gentle pressure.

Blanching of the tissue will be seen to occur, spreading out from the point of injection over the labial or buccal surface, and also lingually.

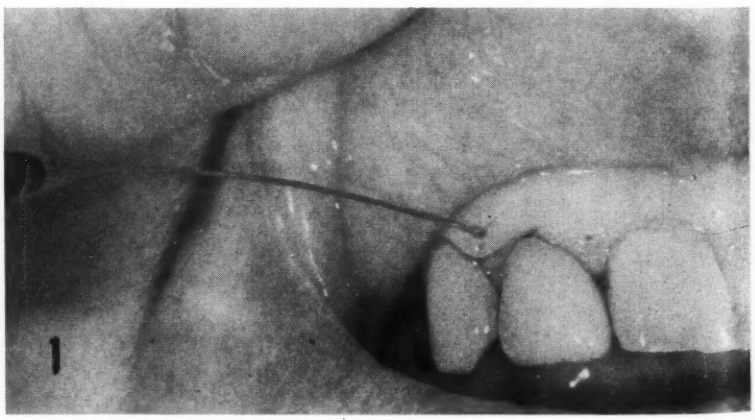
Little Solution Needed to Produce Total Anesthesia—Often, injection on one side of the tooth will be sufficient as the solution will spread to include the opposite side, but it is advised to inject on both sides for certainty.

Topical Anesthetic Used—The application of a topical anesthetic before insertion of the needle is advisable. Within 2 to 3 minutes after the solution has been deposited, the tooth may be removed.

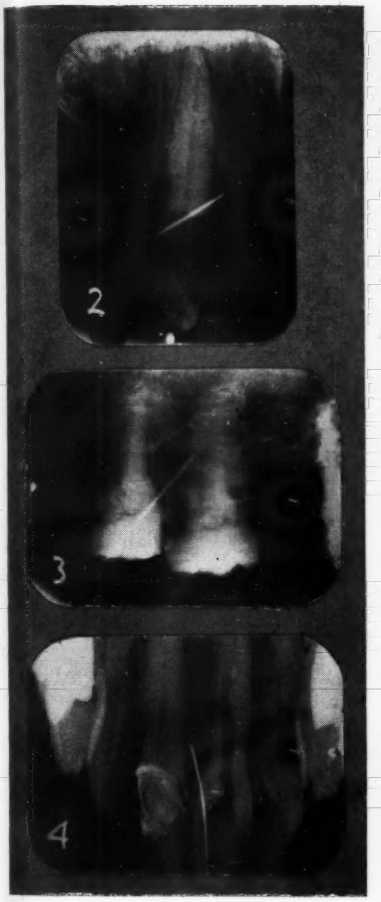
Method to Test Anesthesia—The point of an explorer may be used to test for anesthesia of the tissues surrounding the tooth, but there will be no anesthesia or symptoms of the lip as in other methods. The accompanying photograph (Fig. 1) shows the site of the injection. Figures 2, 3, and 4 show that there is no intraosseous penetration.

Mechanism of New Procedure

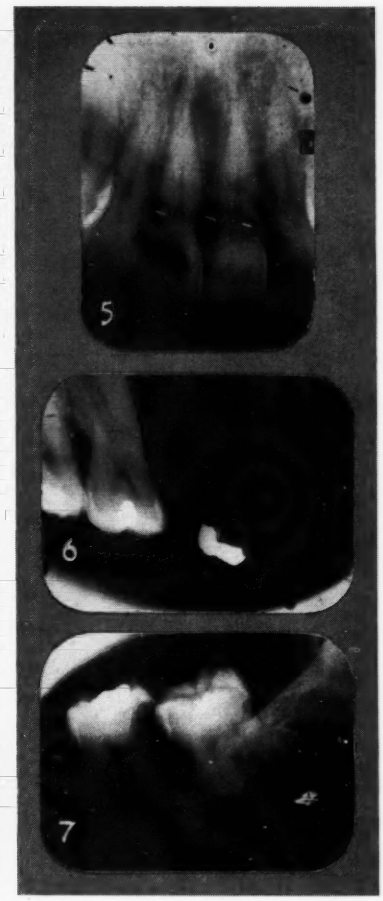
Why it is possible to obtain complete anesthesia by this method for all teeth, including lower molars, and still not require block methods may be explained in part by the following statement: "The vessels and nerves of the teeth are distributed partly to the surrounding alveolar periosteum and partly to the pulp. The nerves give numerous branches to the gums, alveolar and periosteum



1. ***Photograph showing penetration of the needle into interdental papilla for injection.***



2, 3, and 4. ***X-rays showing the needle inserted into tissue. Note that there is no osseous penetration of needle.***



5, 6, and 7. ***Radiographs of three different teeth successfully removed using this technique.***

(periodontal membrane) and pulp cavities."[1]

Nerves Anesthetized—It is believed that anesthetization is obtained of the nerves of the periodontal membrane and the branches to the pulp. The structural make-up of the inferior and infraorbital dental plexi seem to support this assumption.[5,6,7]

Limitation of Anesthesia— Unfortunately, although the anesthesia produced by this method is sufficiently profound for extractions, attempts to utilize the technique for some other surgical procedures have not been equally successful.

[1]Morris: Human Anatomy, ed. 10, Philadelphia, Blakiston and Company, 1942, pp. 1056-58.

Summary

A technique has been presented which provides effective anesthesia for the extraction of teeth with the following advantages:

1. Unpleasant lip sensations, such as fullness, numbness, and distortion are eliminated.
2. Postoperative muscle or soft tissue pain which often occurs after anesthesia has worn off is eliminated.
3. The possibility of the occurrence of a hematoma, which sometimes happens with an infraorbital injection, is eliminated.
4. The danger of injection into the buccal pad of fat is eliminated.
5. Greater patient comfort and natural sensations in an immediate denture or anterior fixed bridge insertions are present.
6. A palatal injection is unnecessary.
7. The need for a second injection in the event the first one fails to "hit the nerve" as in the mandibular block, is eliminated.
8. The hazard of intravenous injection of the solution is eliminated.
9. The method provides for rapid anesthesia, it requires less solution, and makes more rapid operation possible.

7 Old Post Road South

AMA Votes on Safety of Fluoridation

THE HOUSE of Delegates of the American Medical Association at the December 1957 meeting of the Association voted that:

"No evidence has been found since the 1951 statement by the Councils [of Drugs, and Foods and Nutrition] to prove that continuous ingestion of water containing the equivalent of approximately one part per million of fluorine for long periods by large segments of the population is harmful to the general health."

Stabilization of LOOSE TEETH

with Reinforced PLASTIC SPLINTS

ELLEN K. WELLENSIEK, D.D.S., Houston, Texas

DIGEST

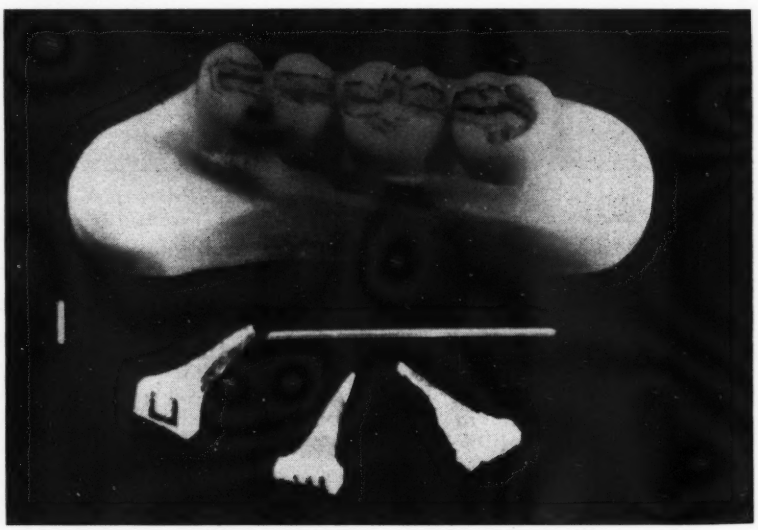
In the practice of general dentistry, it is necessary at times to use imagination in order to accomplish the desired results with a minimum of expense and discomfort to the patient. Many teeth that might have been retained in a healthy condition for a long period of time have been removed. These often condemned teeth, if given the proper support by splints, thereby eliminating abnormal stresses and strains, will tighten and the bone will actually regenerate. This article describes a step-by-step procedure for completing splints of this type.

Treatment of Choice

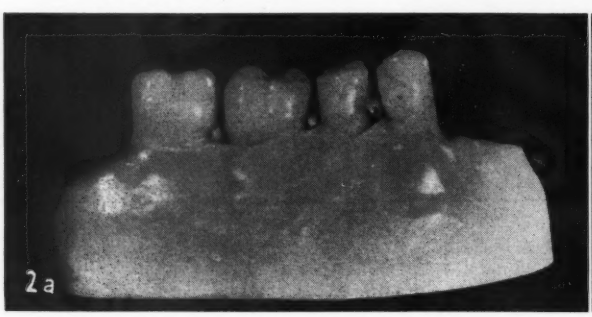
The ideal approach to this treatment involves the use of gold cast crowns and inlays. Some patients, however, are financially unable to accept this type of treatment. There are also some cases in which the ability to respond to splint treatment is doubtful. In this type of case the reinforced plastic splint may be referred to as a therapeutic splint. The teeth may be stabilized for a period of time sufficient for the improvement to be observed by the dentist and the patient. This is often a means of convincing the patient of the importance and need for further, more extensive rehabilitation. A splint of this type may be completed in one thirty-minute appointment.

Procedure

After a careful study of the radiographs and study models, decide which teeth are in need of stabilization and the teeth to which they may be stabilized. The following steps should then be completed:



1. ***Preparations and wire fitted to preparation.***



2a and **2b** (*a*) *Wedges prepared and placed, buccal view.* (*b*) *Wedges prepared and placed, lingual view.*

1. The tooth or teeth preparations need not be too extensive. If two or more teeth are to be tied to one another, make an occlusal cut from one tooth to the other to the desired depth. This first cut may be made with a diamond disc, or a No. 557 bur in a high speed handpiece. Extend all of the grooves and carry the interproximal extension slightly below the contact points. Undercut the preparations for needed retention (Fig. 1).

2. Using 16-gauge stainless steel wire, cut the necessary length to extend the full length of the series of preparations. Be sure the wire is well below the occlusal surface and allow ample plastic to cover it (Fig 1).

3. Make the interproximal wedges from 2K Wood Wedge material. Fit these wedges into each interproximal space. After they are properly fitted, wrap the wedges with foil to prevent the wood from absorbing the plastic liquid during processing (Fig. 2, a and b).

4. Isolate the field, dry thoroughly, and insert the wedges into their positions (Fig. 3).

5. Paint a thin layer of plastic into the seat of the preparations, and down into the interproximal spaces to the top of the wedges.

6. Lay the prepared section of wire into the preparations and force down into the bottom layer of plastic. Continue to cover the wire and fill in the preparations until the desired thickness and contour are attained.

7. After the plastic has completely set, remove the wedges and finish the material with stones and finishing burs. Polish with pumice and Sure-Shine. Mill in the occlusion (Figs. 4, 5, and 6).

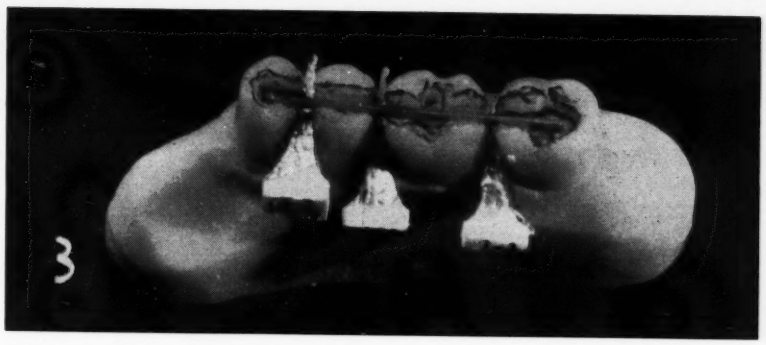
Conclusion

These splints may be removed at 4 to 6-month intervals and replaced. This allows inspection and prophylaxis.

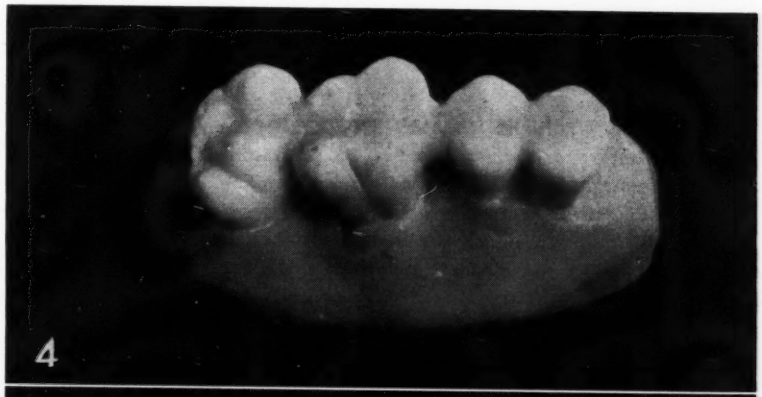
Materials Required

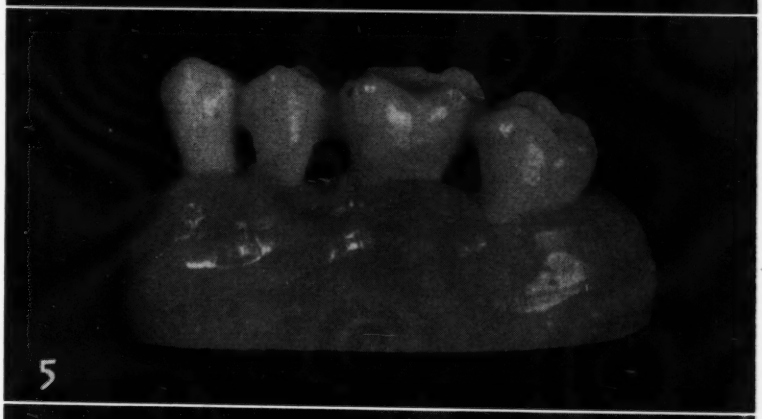
(1) Self-curing plastic, and liquid
(2) 000 Camel's hair right angle brush
(3) 2K wedges
(4) Aluminum or tin foil

1020 *Barkdull*



3. ***Preparation wedges and wire in place.***





4. ***Processed splint polished over wire.***
5. ***Processed splints, lateral view.***
6. ***X-ray showing wire in crowns of teeth.***

FIXED APPLIANCES *in Rehabilitation*

DONALD K. POKORNY, D.D.S., Grosse Pointe Farms, Michigan

DIGEST

The subject of full mouth rehabilitation or reconstruction has been thoroughly discussed in dental literature. The case described in this article, however, presents a different procedural approach in restoring missing posterior teeth. The step-by-step technique employed is outlined and each step is illustrated.

Case History

The patient, white, male, age 25 presented with the following complaints: (1) Inability to chew, (2) temporomandibular pain, (3) dissatisfaction with his appearance.

Oral Examination—The previous prosthetic dentistry consisted of a plastic partial replacing the upper four anteriors. The remaining upper teeth had been restored on all surfaces frequently. No consideration had been given or suggested for the replacing of the lower posterior teeth.

Preparatory Measures—(1) Full mouth radiographs and diagnostic models were prepared, (2) caries was removed from the two lower molars, and (3) temporary restorations of zinc oxide and eugenol were placed.

Use of Plastic Splint—It was decided to construct a plastic splint to alleviate the temporomandibular pain. The patient wore the splint for three months with periodic examination and adjustments. Gradual disappearance of the pain was noted.

Analysis of Proposed Treatment

As the diagnostic models indicate (Figs. 1, and 2) the usual course of treatment would be the construction of a lower removable partial denture, precision or clasped, and upper fixed bridges. However, the patient expressed a distinct dislike for a removable appliance. Plans were thererfore made to construct fixed appliances throughout the mouth.

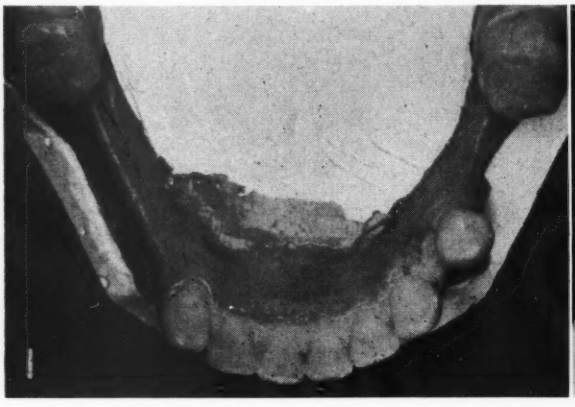
Oral Conditions Noted—1. On the lower left side the second biscuspid, and the first and second molars were missing. A diastema existed between the cuspid and first bicuspid and the first bicuspid was rotated mesially.

2. On the lower right side the first and second bicuspids and the first and second molars were missing.

3. The remaining teeth on the upper arch were the left cuspid, first bicuspid, first and second molars, the right cuspid, first and second bicuspids, the first and second molars. All the teeth present had multiple restorations and recurrent caries.

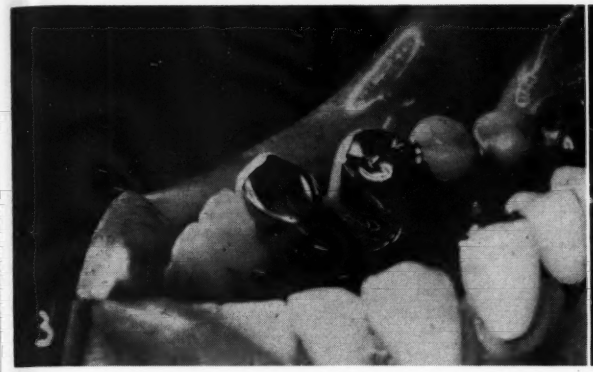
Procedural Steps: Lower Right Bridge

1. The cuspid and molar teeth were prepared for full crowns with shoulders.



1. *Lower diagnostic model, made of plastic.*

2. *Upper diagnostic model, made of plastic.*



3. ***Lingual view of the lower left bridge, showing the splinting effect obtained by using a lingual bar type of connector.***

4. ***Labial and buccal view of the lower left bridge, cuspid, and first bicuspid plastic veneer crowns, the two tube tooth pontics and a partial molar veneer crown.***

2. It was decided not to contour the gingival area in the shape of individual pontics because it was believed that this would make the maintenance of oral hygiene more difficult.

3. The tube teeth (two bicuspids and one molar) were therefore designed with a complete gold saddle, which overlapped the buccal and lingual ridge ½ millimeter to 1 millimeter (Figs. 5, 6, 7, and 8).

4. The interproximal space between the cuspid and the pontic was left in order to facilitate the use of dental tape.

Oral Hygiene Maintained—In the two years in which the bridges have been in the mouth (cemented with temporary cement) periodic examination has revealed that neither bridge has collected food particles on the tissue side.

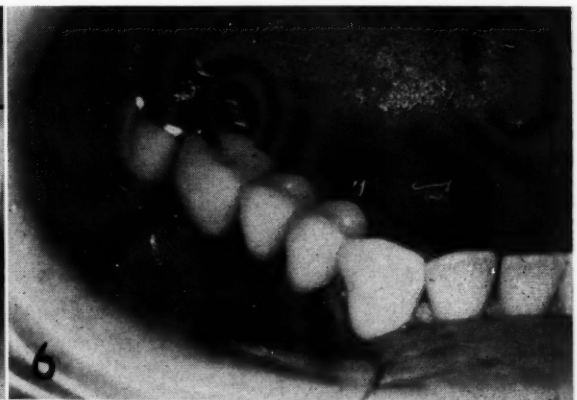
Results Desirable—Because the bridges exhibit the desirable characteristerics of pontics and none of the undesirable it is considered that this type of bridge adaptation will be useful in long span bridges.

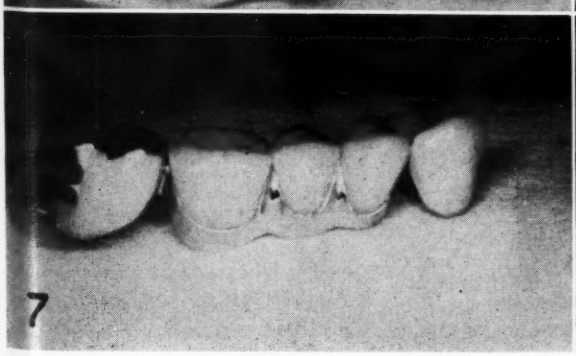
5. ***Lower right bridge. Note the wide embrasure between the cuspid and pontics and the ridge adaptation.***

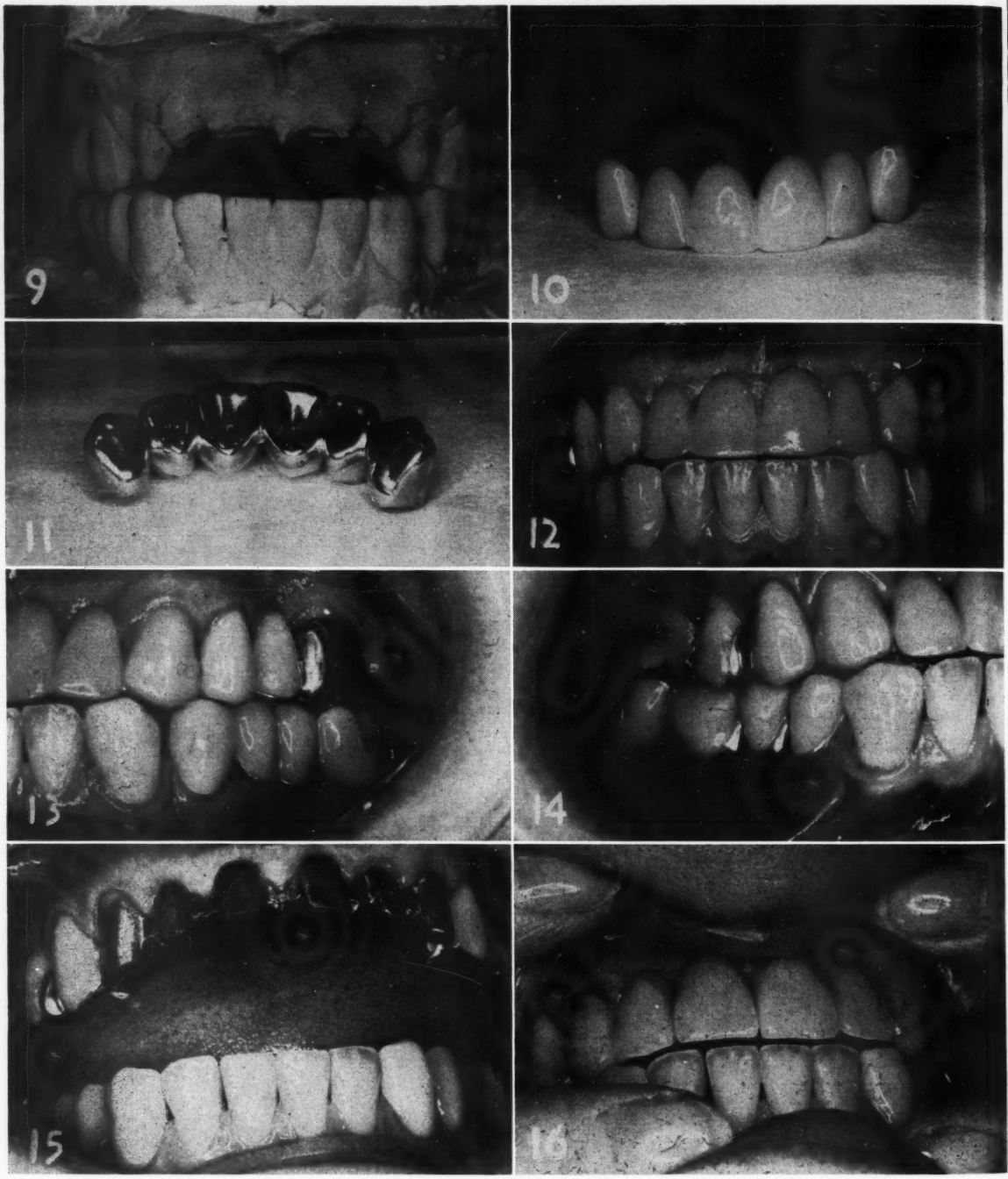
6. ***Occlusal and side view of lower right bridge.***

7. ***Lower right bridge.***

8. ***Buccal view of lower right bridge.***



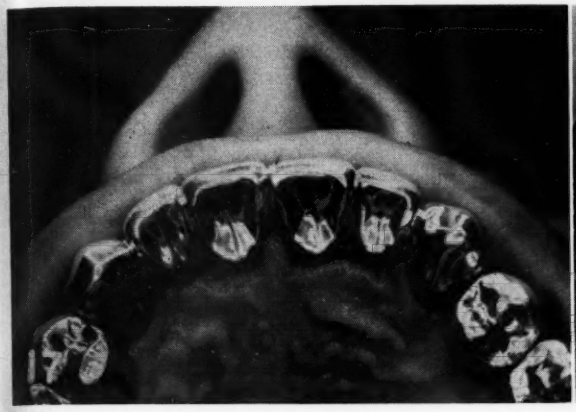




9. *Preparations on the working casts of the upper anterior bridge, hydrocolloid impressions used.*
10. *Labial view of the plastic-gold anterior bridge with Trupontics®.*
11. *Lingual view of the anterior bridge.*
12. *Plastic and gold bridge with Trupontics® in the mouth.*
13. *Completed left side.*
14. *Completed right side.*
15. *Gold framework for the porcelain bridge constructed as a unit.*
16. *Individual jackets in place on the gold framework constructed as a unit.*

Lower Left Bridge

Upon examining the models and the mouth it was decided to splint the lower left cuspid and bicuspid together to aid in support of the strong side. This however presented the cosmetic problem of splinting two abutments together with an unsightly space between them. Over-contouring



17. ***Occlusal view of the upper arch.***

18. ***Anterior view of completed mouth.***

the teeth was possible or constructing an unsightly rigid bar connecting the two abutments.

Lingual Bar Used—It was decided to try a lingual bar type of connector to join the two abutments:

1. The lingual bar was soldered to the cuspid and first bicuspid (Figs. 3, and 4).

2. The teeth were prepared for full crowns with labial and buccal shoulders with a definite bevel on the shoulders.

3. To fulfill cosmetic requirements porcelain tube teeth and gold were used for pontics. The tube teeth were ground and shaped conically at the root end or gingival portion, maintaining the interproximal space.

4. The entire gingival portion and two-thirds of the lingual portion of the pontic were constructed of gold. By constructing the bridge in this manner it was possible to achieve both function and cosmetics.

Upper Anterior Bridge

The upper anterior bridge was prepared with a partial labial shoulder with a definite ½ to 1 millimeter bevel on the abutment teeth (Fig. 9).

Cosmetic Factors Considered—Two different types of bridges were constructed: 1) A conventional veneer crown and Trupontic® bridge, and 2) a porcelain bridge built as a unit. The purpose was to determine which was most pleasing cosmetically (Figs. 10 - 16). Because of the bevels used for the plastic veneers the porcelain bridge was not cemented in.

Restoration of Choice—In the author's opinion, however, porcelain pontics, veneers and jackets are the restorations of choice for cosmetic purposes, despite many limitations which exist.

Impression Technique

The impression material used was hydrocolloid and each bridge was constructed in two appointments. Full arch impressions were taken along with individual impressions. The results achieved in using hydrocolloid are extremely gratifying and the technique merits consideration for all gold and porcelain impressions.

Summary

The use of tube teeth gives the dentist an opportunity to achieve the cosmetic result that many patients desire. The different approach to a diastema present in the posterior area of the mouth makes it possible to achieve stability, function, and satisfactory cosmetic results (Figs. 17, and 18).

The use of a full saddle type pontic for long span bridges warrants consideration.

There are definite indications for the use of either plastic or porcelain bridges, constructed as a unit according to the requirements of the bite.

The aim in this case was a pleasing cosmetic result in addition to excellent functional properties which enabled the patient to postpone dentures for some time.

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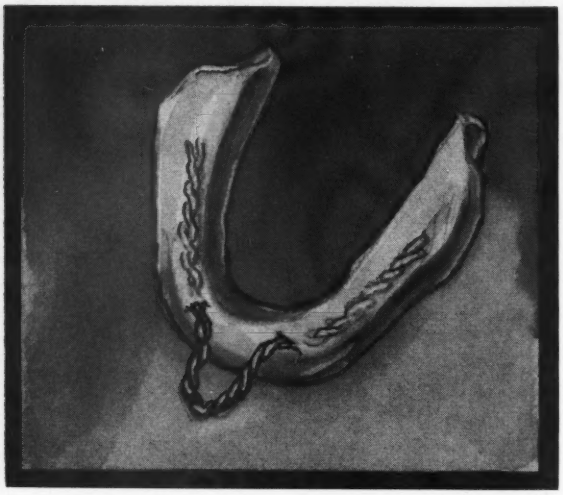


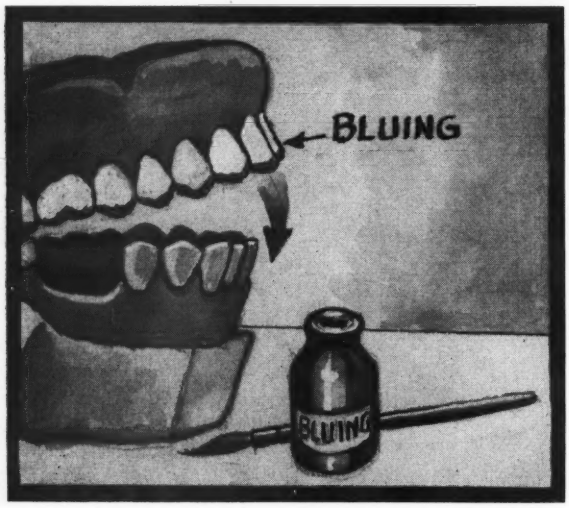
1

Clinical and Laborato

An Acrylic Impression Tray

Stewart M. Johnson, D.D.S., Pittsburgh

1. A piece of twisted florist's binding wire embedded in the acrylic tray makes a convenient handle.

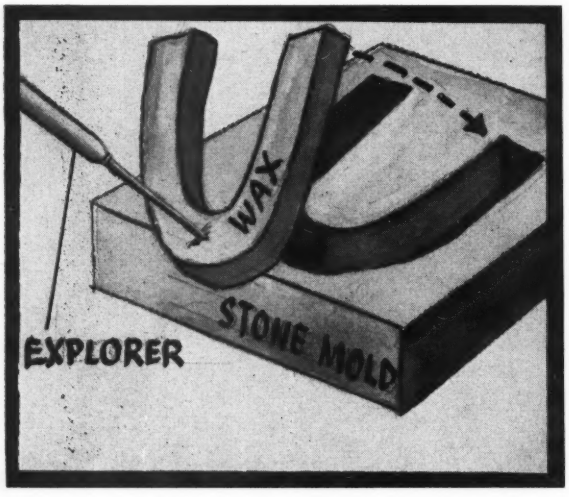


2

An Articulating Liquid

C. R. Herrick, D.D.S., Hobart, Indiana

2. Use a camel's hair brush and paint the models with two or more coats of household bluing. This is to be used for laboratory procedures only.



3

A Mold for Bite-Rims

Walter A. Lichota, Chicago

3. Make a mold in dental stone the size and shape of the average bite-rim. Pour molten wax into this mold. Time is saved that is usually required to roll the sheets of wax into bite-rims.

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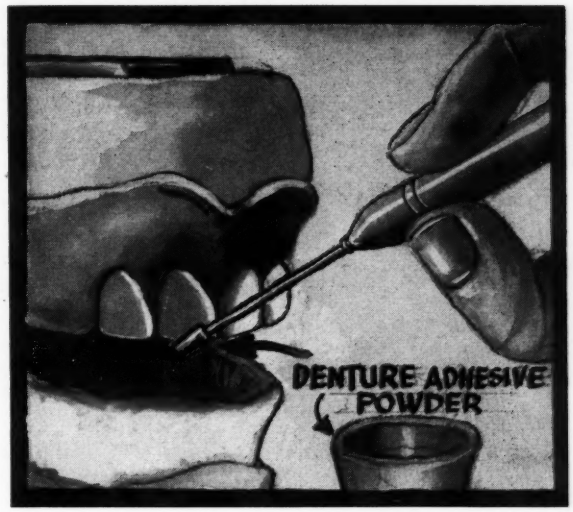
SUGGESTIONS . . .

An Articulating Paste

C. H. Lundblad, D.D.S., Battle Creek, Michigan

4. Rather than using glycerine as a binder, incorporate denture adhesive powder with the abrasive. This mixture is more adherent to the teeth.

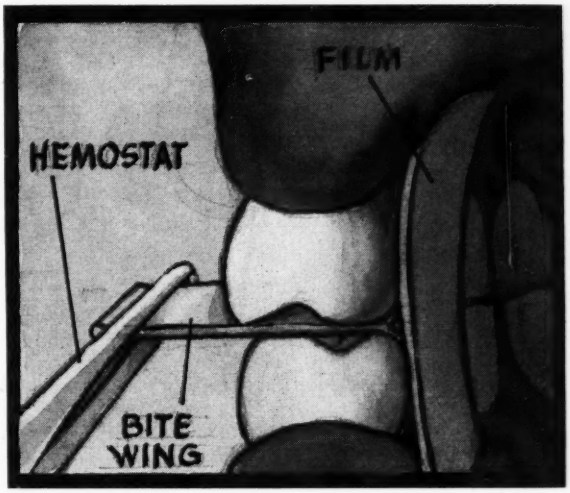


4

Bitewing X-ray Holder

Douglas M. H. Chandler, Chicago

5. Grasp the external edge of the bitewing film with a hemostat or needle holder. A slight tug toward the buccal will place the film firmly against the lingual just prior to complete occlusion.

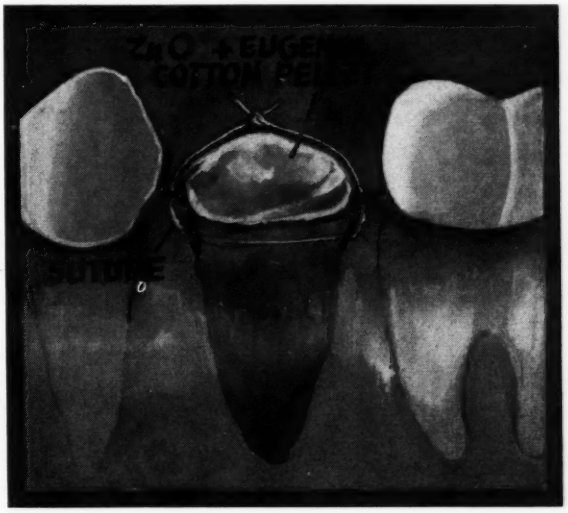


5

Protector for a Tooth Socket

J. D. Mersheimer, D.D.S., Chicago

6. Place the suture material through the soft tissue at the top of the socket. Do not tie. Mix zinc oxide-eugenol paste and incorporate into a cotton pellet. Bring the ends of the suture around the dressing and tie in position. Mold the dressing to fit the opening of the socket. Remove the suture and dressing in two to four days.



6

technique involved; and jot down the advantages of the technique. This shouldn't take ten minutes of your time. Turn to page 40 for a convenient form to use.

Send your ideas to Clinical and Laboratory Suggestions Editor, DENTAL DIGEST, 708 Church Street, Evanston, Illinois.

The EDITOR'S *Page*

ALTHOUGH calculus is one of the most common conditions that confronts the dentist, little is done in clinical practice to prevent the formation of these salivary concretions. Calculus is a foreign body and as such is an irritant to the soft supporting tissues. The dentist removes deposits of calculus and the degree of devotion to this duty influences the thoroughness of his operative procedures. The dentist who is too busy with restorative or surgical operations is often lax in his attack on calculus. He may remove gross deposits and allow that which is unseen to remain in situ. He may indeed rationalize his indifference by placing the blame on the patient by saying that the patient is unskilled or disinterested in oral hygiene or that he is indisposed to pay a suitable fee for "prophylaxis."

The formation of calculus is a biologic event and should be treated as one. It is insidious and painless, but these are not valid reasons why the dentist should not use as much zeal to treat the condition as he does to treat caries. The clinical issue of caries has received infinitely more attention than has periodontal disease. Public health projects, such as fluoridation to reduce the incidence of caries, have received conspicuous attention and strong support. Technical developments, such as high-speed methods of cavity preparation, have been focused to the treatment of caries. All developments in public health and in technical procedures are commendable. The fact stands, however, that periodontal disease is the reason for the loss of more teeth in adult life than caries or the sequelae of caries. And certainly calculus is a biologic condition that is associated with disease in the marginal periodontium and in the attachments that hold the tooth in its socket.

Although the mechanism of calculus formation is not clearly understood these facts are generally accepted:

1) Anything that will decrease the solubility of calcium salts in the saliva encourages calculus formation. When carbon dioxide is lost the saliva becomes more alkaline and calculus forms. Any factors that will increase alkalinity will be favorable to calculus formation.

2) Colonies of bacteria, usually anaerobic, erect an organic stroma or nidus into which calcium salts are precipitated. The metabolic activity of bacteria may also serve as a producer of alkalinity.

3) Systemic factors such as vitamin deficiencies and emotional conditions that disturb the calcium-phosphorus balance may be favorable to calculus deposition.

A sensible experiment was made by Rice[1] who reasoned that "the present series of studies seems to indicate that in the production of dental calculus bacteria play an important role. They also indicate that if the bacterial flora of the saliva could be controlled in a feasible manner the formation of dental calculus could be inhibited or prevented."

In his *in vitro* experiments Rice tested the efficacy of several enzymes and antibiotics to inhibit or prevent calculus formation. The enzymes had no significant inhibitory action. "The antibiotic substances tested, that is, Aureomycin, Achromycin, Neomycin, and Tyrothricin, which inactivated or eliminated the salivary bacterial flora completely inhibited the formation of dental calculus in vitro."

Additional study will be required to determine if the use of antibiotics is indicated in clinical practice to control the formation of calculus.

[1]Rice, Bruce H.: Studies on Dental Calculus Formation, J. West. Soc. Periodont. **4**:103 (December) 1956.

MEDICINE *and the Biologic Sciences*

Cardiac Patient—Management

In cardiac management, clinicians frequently overlook and neglect the extracardiac factors. Many of these factors are remedial and vitally affect the general health of the patient and the cardiac therapy.

Many well-to-do and middle class patients as well as those who attend out-patient clinics are woefully inadequate in their knowledge of balanced menus and general healthful living habits. Adequate and proper food is essential for the prevention of anemia, hypoproteinemia, and borderline deficiency states that so frequently accompany and magnify the disabilities of chronic heart disease. Some of these patients are also chronic users of alcohol which deprives the body of protein and vitamin intake even though the caloric balance may be well maintained. Many need more beefsteak, eggs, and fresh fruits and less digitalis and mercurial diuretics.

Increasing significance must be attached to nutritional deficiencies in their relationship to heart disease. In patients with recurrent chronic failure the maintenance of nutritional balance is most vital and centers around replacement of depleted body stores, as well as restoration of deranged myocardial metabolism.

Vitamin B or C deficiency should always be considered when there is "heart failure" with no apparent cause. Vitamin deficiency frequently exists without clinical evidence of true beri-beri, pellagra, or scurvy. Deficient body protein is often overlooked in cardiac failure. With an alteration in protein metabolism, heart failure may remain disturbingly refractory to treatment. This hypoproteinemic state calls for a high protein intake with a minimum of salt, or, in severe cases, parenteral protein. Protein deficiency may exist in the presence of a fairly normal serum-protein level and a considerable depletion of protein stores may be present without being reflected in the usual laboratory tests.

Anemia is a frequent and remedial "extracardiac" state. It is gratifying to note the number of patients with chronic heart disease whose digitalis requirements can be reduced, and whose cardiac reserve can be enhanced and conserved by the simple correction of an associated anemia. Ensur-

ing a good quality of circulating blood is a vital, but too often neglected part of cardiac management.

Digestion and assimilation are ultimately connected with mastication. It is imperative therefore that the teeth be conserved to ensure an adequate dentition.

There is definite correlation between overweight and cardiovascular disease. It is important to stress weight reduction in the obese cardiac patient.

Stress is a significant factor in psychosomatic relationships. The attitude of the physician alone can often produce dramatic effects. It can be responsible for condemning a patient to life-long suffering because of "iatrogenic" heart disease. By contrast, it can add years of happiness by helping a patient with chronic organic heart disease to learn how to live compatibly with his disablility.

Marvel, Peter H., and Durham, Robert B.: Extra-Cardiac Factors in the Management of the Cardiac Patient, Current M. Digest **23**:74-82 (*May*) 1956.

Effects of Sunlight

The conservative or rational use of sunlight or its artificial substitutes is healthful to most people. The habit of exposing to intense or prolonged sunlight considerable areas of the nonacclimated skin during the first days of the season is open to question. There is a notable seasonal incidence of temporary incapacitating sunburn and an increasing number of diseases caused or adversely affected by the sun's rays. Chronic excessive exposure to the elements prematurely ages the skin and promotes development of keratoses and epitheliomas.

Distressing sunburns or other adverse effects on the skin frequently follow when the properties of solar radiation are disregarded. The intensity of the sun's rays reaching the earth's surface directly depends chiefly on the thickness of the atmosphere. Smoke, green foliage and the brown earth absorb considerable sunlight. In addition to direct solar radiation a great amount of the sunburn radiation is scattered by the sky, light, clouds, or fog and reflected from surroundings. Sky radiation accounts for the severe sunburn that may follow sun-bathing on a hazy or foggy summer day. Water, ice, and snow reflect sunlight, thereby increasing the dosage of a given exposure.

The reflection of the sun's rays from the surface of water is twice as great as from a green field but only one-fourth as much as from fresh-fallen snow. The intensity of ultraviolet rays also varies with the time of day, season, altitude, and latitude. Persons most likely to suffer detrimentally from exposure to the sun are those with blue eyes, red hair, and fair skin.

After sufficient exposure to the sun, erythema appears after a latent period of two to six hours in the normal untanned white skin. It usually reaches a maximum in about 10 hours. Depending on the exposure and the tolerance of the skin to sunlight, the response varies from a mild erythema to a sunburn with edema

(*Continued on page* 39)

and blistering of the skin and systemic symptoms. Pigmentation usually begins with the subsidence of the sunburn erythema. The natural skin oils and cellular debris on the surface of the skin offer only minor protection.

Thickening of the horny layer of the skin, subsequent to exposure, is thought to be the main mechanism by which accommodation to sunlight occurs. Not only does the horny layer absorb light strongly in the ultraviolet zone, but the flattened horny layer and granular layers of the epidermis reflect and scatter light. To a large extent this prevents the sun's rays reaching the easily damaged deeper skin layers.

In persons habitually exposed to wind and sun pronounced persistent changes may occur. In this heliodermatosis, excrescences and scaly erythematous lesions appear that could become malignant tumors. Sunlight may precipitate or aggravate a number of diseases. Persons with pulmonary tuberculosis are vulnerable. Also sunlight may precipitate a variety of lesions or pigmentation in patients with inherited skin disease, disturbed porphyrin, or endocrine metabolism, or severe malnutrition resulting from starvation or alcoholism.

Kesten, Beatrice M.: The Effects of Sunlight on the Skin, JAMA **161**:1565 1567 (*August* 18) 1956.

Cancer— Blood Changes

In general, neoplastic disease is accompanied by decreased concentration of total serum protein and increased concentrations of blood fibrinogen and serum globulin. Alpha globulin rises significantly, as do protein-bound carbohydrate components.

In persons with pheochromocytoma or carcinoma of the pancreas, pituitary, or adrenal cortex, fasting blood glucose may be augmented and glucose tolerance lowered. Hypoglycemia is seen with carcinoma or adenoma of the islands of Langerhans and with primary cancer of the liver.

Blood urea and other nonprotein nitrogen components may be elevated due to (1) dehydration, (2) shock from operative procedure or massive hemorrhage, or (3) obstruction of urine outflow. Renal disorders such as nephrocalcinosis and pelvic lithiasis with hyperparathyroidism or tubular deposition of casts with multiple myeloma may also be responsible. Renal function is impaired with hypercalcemia and hyperproteinemia when calcium mobilization is excessive due to parathyroid tumor or to osseous metastases from lymphoma or breast carcinoma.

The liver is often the site of metastases and hepatic function is frequently affected. With extrahepatic obstruction, serum bilirubin and alkaline phosphatases are increased, serum cholesterol is altered, the proportion of free cholesterol is augmented and cephalin flocculation and thyroid turbidity are abnormal.

Electrolytes and pH changes are nonspecific with malignant disease. The concentration of serum calcium tends to decrease with low concentration of protein or high concentration of phosphorus. Renal impairment up-

(*Continued on page* 40)

CLINICAL AND LABORATORY SUGGESTIONS

(*See pages* 28 *and* 29)

Form to be Used by Contributors

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sets calcium-phosphorus, potassium and protein ratios with consequent changes in serum concentrations and slight alterations in pH.

Serum or plasma enzymes apparently are not subject to homeostatic regulation, as are other serum components. Serum alkaline phosphatase is usually elevated in bone diseases associated with osteoblastic reaction or with liver disease with obstruction, such as osteogenic sarcoma and osteoblastic metastases from lymphoma or from prostatic carcinoma. Adenoma or carcinoma of the parathyroids also raises the enzyme concentration. Serum acid phosphatase is increased with carcinoma of the prostate, particularly when dissemination has occurred.

Bodansky, Oscar: Blood Biochemical Alterations in Neoplastic Disease, M. Clin. North America **40**:611-628 (*June*) 1956.

Contra-Angles

A Week-end Dental Conference

Every program chairman has pleasant dreams of creating the perfectly balanced fare. He hopes that his colleagues will come in large numbers and will feel fully repaid for their efforts. The fact that many dental meetings are poorly attended and that not much enthusiasm is engendered suggests that the dreams and aspirations of many chairmen turn into nightmares.

The customers sitting in the audience usually do not know the efforts that were spent to develop a program. Nor do they appreciate that every dental program represents a sacrifice on the part of someone. The one who made the sacrifice may be an officer of the society, the program chairman, or the guest speaker himself. Contributions that are made in time and energy can never be repaid by the dental society membership.

After attending dental meetings for more than a quarter-century one develops a kind of sensitivity (or perhaps an allergy) for certain recurring inefficiencies and poorly executed programs. The meeting that gets under way too late and the one that is stocked with a mass of extraneous material before the main event are two meeting patterns that most of us could do without.

Any meeting where the time factor is poorly planned or disregarded is a sloppy meeting. If there are 100 persons in attendance, every *minute* that the program is off schedule represents a loss in productive time of more than one hour and a half. The aggregate production time that is lost every year in the United States because meetings are off-schedule would be a staggering figure: thousands of man-hours.

(*Continued on page* 42)

With this introduction of what a meeting should *not* be I am pleased to report one that was balanced with good judgment and executed with skill: The Annual Fall Conference of the Indiana University, School of Dentistry, Alumni Association.

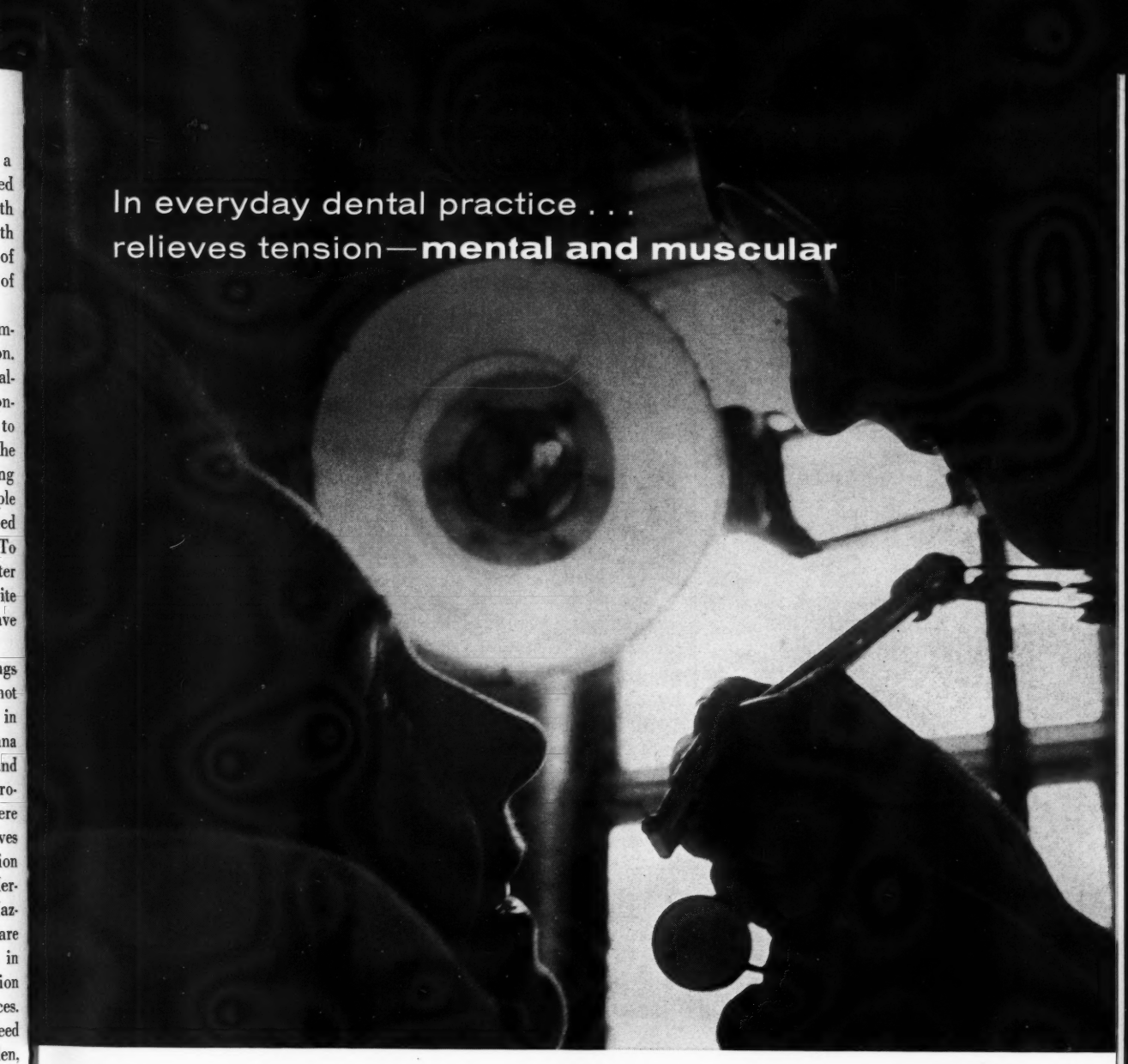
This meeting was held on the campus of the University at Bloomington. That gave a touch of pleasant nostalgia to alumni and a glow to nonalumni who had this opportunity to associate with young people in the atmosphere of a college, to see young love blooming, to watch young people who have not yet been overburdened with the heaviness of the world. To hear songs and cheers and laughter should be tonic to any adult despite how sour and stern the years have been to him.

Unlike many dental meetings where wives are tolerated, but not warmly welcomed, this meeting in the colored autumn hills of Indiana encouraged the women to come and they were made a part of the program. The scientific subjects were geared to the interest of the wives as well as to the dentists. "Radiation Mutations" by Nobel prizeman Herman J. Muller and "Radiation Hazards" by John Campbell, M.D. are subjects of interest to everybody in this day of emphasis on radiation from natural and man-made sources.

The presentation on high-speed techniques by John V. Borden, D.D.S., the inventor of the air turbine handpiece, gave any wife the clear idea how much more important it was for the dentist to buy equipment that would make his stresses fewer and his tensions less than to buy a new automobile or household gadget for his family. Many dentists who use obsolete dental equipment are in the forefront as buyers of the latest in automobiles, television sets, and other nick-nacks. If wives knew something more about the technical advances in dentistry that save time and reduce stress the women would be the ones to insist that their husbands invest in the most modern dental equipment.

Off-hand I cannot think of a dental college in the United States that is not

(*Continued on page 44*)



provides *dual attack* on the entire tension spectrum:

- Anxiety, apprehension, and tension states preceding, accompanying, or following dental treatment
- Anxiety and tension secondary to dental abnormalities
- Anxiety and tension associated with dental procedures (scaling, cleaning, incising, draining, drilling, extracting, reconstructing)
- Tension states inducing such conditions as bruxism and jaw-clenching
- Muscle spasm of face, lips, or cheeks impeding operative progress
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affiliated with a university. Many of these unions are in name only. There is no serious attempt to integrate the dental school with the other departments of the university. The letterhead announces the union. The catalogue binds it. In many cases there is no real organic relationship in scholarship or in the social affairs.

At the Indiana University meeting of the dental alumni the school of speech gave a special matinee performance of a play, the school of music presented the musical program at the annual banquet, and the athletic department honored the dental alumni with a half-time feature at the football game.

These week-end dental conferences that combine the serious with some fun and use the resources of the university should be alluring to dentists and their wives in all parts of the country.

The Machines are Silent

The newest version of the flying saucer is described as a device that can shut off the motor and dim the lights in an automobile that snoops too close. Four residents of Texas and three policemen and a fireman near Chicago reported this kind of experience. These eight people said that when they came close to the flying object the visitors from wherever they came projected some energy from their space ship that was powerful enough to silence motors and switch off lights of the earth-bound automobiles.

When our scientists were riding high in popularity they assured us that flying saucers were the bunk and our visitors, little green or pink men, from interplanatary space were projections of the imagination. Now that our scientists have slid from grace and from their towering crests in the popular fancy their words on *any* subject are not accepted with the same authority that they were before the Russians proved that they knew a few things that we did not know. The image of the Volga Boatman dimmed our view of the scientific potential of Russia!

(*Continued on page* 45)

Any ray, or energy, or projection that can turn off the power that is used by man to grow his food, propel him from place to place, to do his work is a power more dreadful than the H-bomb. By turning off our sources of power we would be made impotent and would be returned to the ages of the water wheel and the windmill. We would not be destroyed outright as with the H-bomb. We would be allowed to live but in a fashion that regressed us hundreds of years. That could be an end more terrible than annihilation by a bomb. One the long agony of vegetation and frustration; the other quick death.

If power could be controlled and switched off in our machines, tractors, automobiles and trucks, planes, ships, and trains we would be required to live a parochial existence.

The man who was in the fortune to own a horse or mule could plow a field. There are not many animals of work remaining so most people would be required to prepare the soil, to plant, to harvest with their bare hands. No one could raise enough to supply a market. Most of us would starve slowly.

The cities would die by degrees because no one could get to them or away from them. The machines in factories would be idle. There would be no commerce because there would be no goods to be exchanged. Only primitive barter and exchange would prevail.

There would be no communication by the printed word; no radio or television. There would be no army, navy, air force because the modern military machine requires power in many forms. It would be a country without defense.

The refinements of living such as air-conditioning, TV, electric household appliances, elevators, central heating, communal water and sewers, telephones would be immobilized. Each person can make his own list of the things that he would least like to do without. These lists would be startling.

There would be no dental practice except with the hand-instrument and the foot-engine.

The primitive state to which we would have to return would affect everyone. There would be no favorites for an escape. The rich would be more unfortunate than the poor, because they lacked the skills and habits for survival; to dig, to plant, to garner, to store, to process into food. The laborer who could build a shelter, dig for water, cut down a tree would be superior to the philosopher, the scientist, the tycoon. It would, indeed, be a dictatorship of the proletariat!

Is there any energy that can be projected from remote control to shut off motors and turn out lights? There is none that is known to us in the United States at present. That does not mean that a knowledge on such an energy does not exist elsewhere on this planet or on another. Whoever has this awesome knowledge can enslave mankind.

I see no sign that we have cultivated a humility since the Russians

(*Continued on page* 48)

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